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THE WONDERS OF NATURE AND ART;

BEING AN

ACCOUNT

OF

Whatever is moſt Curious and Remarkable throughout the WORLD;

Whether relating to its

ANIMALS, VEGETABLES, MINERALS, VOLCANOES, CATARACTS, HOT and COLD SPRINGS,

AND

Other Parts of NATURAL HISTORY;

OR, TO THE

BUILDINGS, MANUFACTURES, INVENTIONS, and DISCOVERIES of its Inhabitants.

The Whole collected from the Writings of the beſt HISTORIANS, TRAVELLERS, GEOGRAPHERS, and PHILOSOPHERS, among which are ſome *Original Manuſcripts*; interſperſed with pious OBSERVATIONS and REFLECTIONS; illuſtrated with NOTES, and adorned with COPPER-PLATES.

The SECOND EDITION.

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THE PREFACE.

WE flatter ourſelves, that in the following work, the reader will find his expectations anſwered, both with regard to inſtruction and entertainment. He will here find a great number of ſurprizing and delightful particulars, that have been ſcattered up and down the writings of a multitude of authors, which few have ſufficient ability to purchaſe, and fewer have leiſure to peruſe: I ſay, the reader will here find them collected into as narrow a compaſs as the nature of the thing will admit, and publiſhed in ſuch a cheap and eaſy manner, that he will neither have reaſon to complain of the expence, nor that they require too much time to be read without neglecting more important affairs. In a word, the purchaſer of this work will have a *little library* in his poſſeſſion, a view of the *world* as it were in *miniature:* and if in ſummer he chuſes to

read an hour or two in his garden, or by his fire-ſide in a winter's evening, he will doubtleſs, with great pleaſure and benefit, run through the whole; which, when he has done, we dare venture to ſay, he will neither think his time or his money ill beſtowed.

THE mind of man is naturally endowed with curioſity, and feels a ſtrong deſire after knowledge, and we are generally pleaſed to be informed of any of thoſe natural or artificial varieties that have never fallen under our obſervation. To gratify this curioſity, is one deſign of the publication of this work; and as it is calculated to ſuit the taſte of mankind in general, we flatter ourſelves it will meet with proper encouragement. Indeed, if the variety of curious and intereſting ſubjects treated of, can recommend any performance, this has certainly that merit equal, if not ſuperior to any that has yet appeared in the world. What indeed can be a more entertaining, what a more innocent amuſement to the ſenſible part of mankind, than to ſpend their leiſure hours in reading an account of thoſe *wonders of nature*, whether on the ſurface, or in the bowels of the earth, which they themſelves can never expect to obtain

obtain an opportunity of seeing? Indeed, what can more enlarge the mind; what can afford a more rational delight, than a work which treats of whatever is most curious in natural history? Is it possible to read, without a sensible pleasure, of the beautiful structures, the curious manufactures, the surprizing inventions and works of ingenious artists in every part of the world, and of the manners and customs of different nations.

But there is another motive yet to be mentioned, and that none of the least, which induced us to the publication of this work, and which, we hope, will recommend it to a favourable reception, viz. the promoting of *religion* and *virtue*. The more we survey and contemplate the wonders even of this small part of the universe which we inhabit, the more we must be led to adore the power, to admire the wisdom, and to praise the goodness of the great Creator, whose works are great and excellent, worthy to be observed with the utmost attention, and adapted to inspire wonder, love and reverence. Is it possible to consider the structure of the *minutest animal*, of the *least flower*, a *feather*, or a *hair*, without acknowledging the wise

contrivance of the divine hand that formed it? If not, how much more muſt our admiration be raiſed, when we contemplate thoſe wonderful parts of the creation, which will be deſcribed in the courſe of the work here offered to the public? In ſhort, we hope it will tend to convince the atheiſt, (if it ſhould fall into the hands of any ſuch) that there is a God; an all-wiſe, all-powerful, ſupreme Being, the Creator and Governor of the univerſe, whoſe *wondrous works* (according to *Elihu*'s advice) we ought to *ſtand ſtill and conſider*. Job xxxvii. 14.

How theſe ſubjects are handled, muſt be left to the reader's judgment. To ſome, perhaps, the undertaking may appear a very eaſy matter, and little more than a heap of materials compiled from other authors; but let thoſe perſons conſider the great compaſs of reading neceſſary for compleating a work like this, and how difficult it is to find out the proper materials, to reduce them into regular order, to reconcile the contradictions of different authors, to render the ſtile uniform, to diſtinguiſh between truth and romance, and, in ſhort, to travel through a labyrinth,

byrinth, without any clue, without any conductor.

In the annotations, we may venture to say, there is something to please every palate, and that even the divine and the philosopher will not think them unworthy their perusal; but, in general, the work is calculated for those who have not the advantage of libraries, or leisure to turn over many volumes. The Philosophical Transactions have been of great service to us throughout the whole, and we have endeavoured to make choice of the writings of such authors, as have been always reckoned persons of judgment and veracity. Sir George Wheler, Tournefort, Dr. Derham, Dr. Shaw, Dr. Pococke, the author of Spectacle de la Nature, and many others that might be mentioned, are authorities sufficient to be depended on, and such as nobody will call in question. Mr. Moore's travels into the inland parts of Africa have much assisted us in speaking of that part of the world: Sir Hans Sloane, and the reverend Mr. Smith, have furnished us with many curious particulars relating to the American islands; and some more modern travellers of established reputation have furnished this edition with

many curious particulars relating to Spaniſh America and the Eaſt-Indies. As to the medicinal virtues of foſſils and vegetables, we have chiefly relied on Dr. James; and, in a word, we have uſed our utmoſt endeavours to make our collection uſeful in all families, as well as amuſing.

To enumerate all the authors from whom we have borrowed ſomething ſuitable to our purpoſe, would be tedious and unneceſſary, as they are frequently quoted in the courſe of the work. All we deſire is a candid peruſal of it, in which caſe we ſhall be in no fear of its not anſwering in the fulleſt manner what is promiſed in the title. We are alſo perſuaded, that the great number of plates with which it is adorned, will be a conſiderable recommendation of it, and particularly the beautiful views we have added to this edition of the ruins of Athens, Palmyra and Balbec. The uſe of copper-plates is now generally allowed. Young people are more eſpecially delighted with embelliſhments of this nature, and thereby induced to read with double pleaſure: and indeed, by theſe ornaments, in which the objects are in a manner preſented to the eye, every one is enabled to form a more

more perfect idea of what is described, than could be conveyed by mere verbal descriptions.

We have carefully endeavoured to avoid all needless repetitions; but if the reader should find any such, it is hoped he will excuse them, as it is possible the same animal, vegetable, or fossil, may be mentioned under different names in different countries. It was almost unavoidable, indeed, in a work of this kind, not to make, now and then, some addition to a former description, as particulars happened to occur in consulting various writers; but in this edition we have united many of these, and where this could not be so well done, we have referred to what has been said before, whereby the reader is enabled to find out the whole account, almost as readily as if it had been laid before him in one view.

Since the publication of the first edition, a work has appeared under a similar title, in which a very considerable part of this performance has been surreptitiously printed in a very disingenuous manner; both the text and notes being generally taken verbatim,

without the leaſt alteration, or even once mentioning the work from which they were tranſcribed; a proceeding equally unfair and ungenerous. But this we ſhould have paſſed over in ſilence, had it not been neceſſary juſt to mention it, in order to prevent our incurring the charge of piracy, by making uſe of our own materials. The preſent edition is, however, much improved; for, as we have already intimated, later writers have been conſulted, and abundance of articles of a very curious nature have been added.

THAT ſuch enquiries are highly commendable, is ſcarce to be doubted, ſince we cannot ſuppoſe that God would have beſtowed ſo much exquiſite workmanſhip and ſkill upon his creatures, to be looked upon with a careleſs eye, much leſs to have them ſlighted and deſpiſed. When therefore thoſe who make reſearches into the works of nature are aſked, To what purpoſe ſuch enquiries, ſuch pains, ſuch expence? The reply is obvious, It is to anſwer the ends for which God employed ſo much wiſdom and power about them, and gave us ſenſes to view and ſurvey them. This is following and tracing him whither he himſelf leads us, that we may ſee and admire

mire his handy-work ourſelves, and to ſet it forth to others, that they may ſee, admire, and praiſe it alſo.

But indeed there is no neceſſity for an uncommon and penetrating genius, in order to be capable of obſerving the wonders of the creation, which are evident to the meaneſt capacity. *Remember* (ſays Elihu) *that thou magnify his work, which men behold: every man may ſee it, man may behold it afar off*, Job xxxvi. 24, 25. Since therefore the works of God are ſo viſible to all, and ſuch manifeſt indications of his being and attributes, they plainly argue the perverſeneſs of the atheiſt, and leave him inexcuſable: for even the moſt barbarous and ignorant nations have from thence inferred the exiſtence of a deity, though they have been under great miſtakes in their notions and concluſions about him; and it is obſervable, that mankind, in all ages, have naturally and univerſally agreed in deducing their belief of a God from the contemplation of his works. So that we are apt to think, a real atheiſt is a thing hard to be met with, and (if there be any ſuch) he may be eſteemed a monſter amongſt rational beings, an oppoſer of all the world, a rebel

againſt human nature and reaſon, as well as againſt his God.

As the works of the creation are ſo many demonſtrations of the wiſdom and power of the Creator, the contemplation of them may ſerve to excite us to the conſtant fear of God, and a ſteady obedience to all his laws; and thus we may make them ſerviceable to our ſpiritual, as they are to our temporal intereſt: for when we conſider them as the works of our ſovereign Lord and Maſter, to whom we are accountable for our thoughts, words and actions, this will make us afraid of offending, and deſirous of obeying and pleaſing him who is ſo wiſe and powerful a being, and on whom alone our life and happineſs depend. This will lead us to pay him that homage and worſhip which his great mercies call for from us, and which he is entitled to by his right of creation and dominion.

Lastly, That infinite goodneſs which appears in all the works of God will naturally tend to excite in us due thankfulneſs and praiſe. Whoever peruſes the following ſheets, or opens his eyes to ſurvey the wonders that ſurround him, muſt needs admire the

the kindneſs God hath ſhewn to his creatures, in providing every thing conducive to their life and proſperity; in contriving and forming them in the beſt manner, placing them in thoſe parts of the globe that are moſt agreeable to their nature, and accommodating them with every thing that may miniſter to their health, happineſs, occaſions, and buſineſs in the world. Upon this account thankſgiving and praiſe is ſo juſt a debt to the Creator, that the Pſalmiſt calls even upon inanimate beings, the *ſun*, *moon*, and *ſtars*, the *hail* and *ſnow*, the *mountains* and *hills*, to join in the tribute; but in a particular manner are mankind of all ranks and orders, of all ages and ſexes, charged with this duty: *Let them praiſe the name of the Lord, for his name alone is excellent; his glory is above the earth and heaven*, Pſalm cxlviii. 13.

THE

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THE

THE INTRODUCTION.

SINCE the revival of the arts, the progreſs made in all the ſciences is amazing. It is generally allowed, that the ancients excelled the moderns in poetry, painting, ſtatuary, architecture, and engraving on ſeals; which they carried to the higheſt perfection; but they were entirely unacquainted with etching and engraving on copper, an admirable art, by which a ſtriking reſemblance of objects is exhibited in prints, without the aſſiſtance of a variety of colours. To them were alſo unknown the noble art of printing, the handmaid of the ſciences.

THE moderns excel the ancients in nothing more than in natural philoſophy. They have penetrated much deeper into the receſſes of nature, and, by the improvement of the art of chemiſtry, the properties of natural bodies, and particularly of foſſils, have been diſcovered. Among theſe, none has engaged the attention of the learned ſo much as the magnet or load-ſtone; for though its attractive force was known to the ancients, they knew nothing of its exciting the needle

needle to point to the pole, and had no idea of the uſe of that admirable inſtrument the mariners compaſs. Glaſs, in ſome meaſure, appears to be of the nature of foſſils, there being ſeveral kinds of thoſe ſubſtances that nearly reſemble it. This was known to the ancients; but the art of making it has, ſince their time, been greatly improved, and it is applied to uſes to them unknown; particularly to the making of teleſcopes, burning-glaſſes and microſcopes. By means of that modern inſtrument, the teleſcope, many ſtars have been diſcovered, unknown to the ancients; the nature and motion of the primary and ſecondary planets; the ſpots on the ſun; the inequalities of the ſurface of the moon; and, in ſhort, the ſyſtem of the univerſe. Glaſſes of a very different form, are of admirable uſe in giving ſight to the eye dimmed by age, or in bringing diſtant objects to the view of thoſe who are near-ſighted. The art of making burning-glaſſes is now brought to ſuch perfection, that by means of them, we may either melt or change the form of the moſt ſolid bodies. In fine, what an abundant room for ſpeculation, and what admirable ſources of knowledge have been diſcovered by the aſſiſtance of the microſcope!

AMONG the modern inventions, we ought not to omit that of clocks and watches, and particularly the ingenious Mr. Harriſon's time-piece, for

for discovering the longitude; by which the mariner may, with the greatest ease, know at any time how far east or west he has sailed from the port he left.

OUR modern philosophers have likewise made many discoveries with respect to air, fire and water. Air, though of so subtile a nature as to escape the sight, has excited the utmost attention of the curious. Its weight we can ascertain by the barometer; its degree of cold or heat by the thermometer; and by the air-pump is shewn how necessary the density of that element is to animal and vegetable life, and the different effects its rarefaction has on different animals.

IN late ages, the nature and properties of fire have been traced, from the invention of gunpowder and Aurum Fulminans; the force of the inflammable damps of mines, fires in volcanoes, &c.

THE modern discoveries, with respect to water, are numerous and important, as the diving-bell, in which several persons may live for a considerable time at the bottom of the sea; the diving machine, a kind of boat navigated under water; and the art of making salt water fresh.

WE have also much more accurate accounts of plants and animals than were known to the ancients. The discoveries in anatomy are very great,

and

and ſurgery has met with ſurprizing improvements.

ON this ſubject it would be eaſy to enlarge, and to trace our modern improvements through almoſt every art, and every ſcience; but it will be here proper to change the ſubject, and to ſay ſomething of the method followed in this work, which is, we apprehend, at once the moſt eaſy, natural, and entertaining. Inſtead of diſguſting the reader, and wearying his attention, by dwelling too long on a ſubject, we ſhall lead him through the ſeveral countries of the known world, and give him a view, as they riſe, of thoſe wonders which owe their exiſtence to the immediate hand of God, or are the effect of human art and invention. We hope he will not be diſcouraged by the ſeeming length of the journey; for we are perſuaded he will find ſuch a variety of entertaining objects by the way, as will make him forget its tediouſneſs, and fully recompenſe the pains he may take in climbing over the rugged Alps, or traverſing the deſarts of Africa. Beſides, if he does but duly conſider and make proper reflections on the ſurprizing works of Providence, as well as thoſe which the art of man has produced, he will not only have the pleaſure of gratifying his curioſity, but will probably return home with an enlarged ſtock both of piety and knowledge.

IN making this tour of the globe, we ſhall follow the geographical diviſion of it into four parts, beginning with Europe, and ſo proceeding to Aſia, Africa, and America. The ſeveral countries we ſhall have occaſion to mention in each part of the world, ſhall make a ſeparate chapter, and the curioſities of each be ranged in their proper claſſes. But the reader is not to expect, that every little country, territory, or iſland, will be treated of diſtinctly, becauſe many ſuch will afford nothing worthy of obſervation, at leaſt nothing ſo very extraordinary and ſurprizing as to fall within the compaſs of our deſign. Now and then, perhaps, we may ſeem a little immethodical, as we ſhall ſometimes croſs over from the continent to a neighbouring iſland, or launch into the ocean, and take a view of the *wonders of the deep*. However, we ſhall endeavour, as far as poſſible, to obſerve a clear and natural method, and to lead the reader from one country to another, in ſuch a manner, as to give him the moſt ſatisfaction, though he muſt not expect to find all of them equally full of the curioſities of art or nature.

IN a work of this kind, it is not improbable that we may omit ſeveral particulars, which ſome may rank amongſt the greateſt wonders of the world, and inſert others which they may reckon trifling, and ſcarce worthy of a place in a curious collection. This indeed ſeems almoſt unavoid-

able;

able; ſome things that deſerve admiration, out of ſuch a vaſt number as the world affords, may very eaſily eſcape our notice; and others may appear to us of greater moment, than in the eyes of thoſe to whom they are more familiar. Add to this, that it is impoſſible to pleaſe every taſte; and therefore, all that we can do in this caſe, is, to make choice of ſuch articles as have been thought curious and ſurpriſing by the greateſt philoſophers, by the moſt judicious travellers, and by all who have made the wonders of nature or art the object of their ſtudies and attention.

WE have choſen to begin with Europe, not only becauſe it is agreeable to the order in which the parts of the world are uſually placed, but becauſe it is natural to take a ſurvey of the neareſt, before we viſit the remoter regions of the earth; though in them the reader may expect to find the greateſt entertainment. And as it is reckoned a fault in thoſe who travel into diſtant countries, without being firſt acquainted with what is remarkable in their own, we think it proper to give a ſhort account of the chief curioſities of the Britiſh iſles, before we paſs over to the continent.—Thus much may ſerve by way of Introduction; let us now proceed to the work itſelf.

PART

THE WONDERS OF NATURE AND ART.

PART I.

Of EUROPE.

CHAP I.

Of GREAT BRITAIN *and* IRELAND.

CAVERNS *and* SPRINGS.

OF all the natural curiosities to be met with in Britain, none are more famous than those of the Peak in Derbyshire, which are very numerous, but few of them are taken notice of, except six, which, with the duke of Devonshire's fine seat at Chatsworth, make up the Seven Wonders of that country. The most remarkable of these is Elden-Hole, which is a frightful chasm in a rock, in the midst of an open field that has a gentle descent to the south. The mouth of it is about seven yards over one way, and eighteen or twenty the other; but downwards, as far as can be perceived, its di-

menſions grow leſs and leſs. Its depth could never yet be diſcovered, though various attempts have been made for that purpoſe. In the reign of queen Elizabeth, the earl of Leiceſter hired a poor man to venture down in a baſket, which he accordingly did, to the depth of more than two hundred yards; but being drawn up again, he had loſt his ſenſes, and died a few days after. Mr. Cotton, the author of the Wonders of the Peak, let down eight hundred eighty four yards of line, (eighty of which were wet) without being able to find a bottom; but the deſcent not being every where perpendicular, on a ſecond trial, the plummet ſtopt before it reached half that depth. When ſtrangers go to ſee this hole, it is uſual to throw into it large ſtones, which are heard to rebound from ſide to ſide, till the ſound grows weaker and weaker, and is at length entirely loſt.

POOLE'S HOLE, a ſtupendous cavern at the foot of a mountain, is reckoned the ſecond Wonder of the Peak. The entrance of it is very low and narrow, but it ſoon opens into a wide and lofty concavity, like the inſide of a Gothic cathedral. The extraordinary heighth of the arch is ſurprizing enough, but thoſe who have made it a quarter of a mile perpendicular, have gone far beyond the truth, though in length it exceeds that dimenſion. The drops of water which hang from the roof, and on the ſides, have an agreeable effect; for they not only reflect innumerable rays from the candles carried by the guides, glittering like dew in the ſunſhine, but, being of a petrifying quality, they harden in ſeveral places into various forms, which, by the help of a ſtrong imagination, may paſs for lions, organs, lanthorns, flitches of bacon, &c. a thouſand of which imaginary figures are ſhewn you by the country people. The Queen of

Scots

Pools Hole *or* Cave *and* Elden Hole. *page* 2. *VOL. I.*

A the Entrance into ye Cave B the representation of Plants in Rocks of a black Bituminous Substance C the figure of a Lion D the Queen of Scots Pillar E the fig. of a Human Corps F the Sparry Globe call'd ye Font G a Sparry Substance call'd Cottons Haycock H the Flitch of Bacon I the Chair K the Needles Eye All these are form'd by dropping of Water from the Rock of a Sparry matter call'd Stalactites.

Scots Pillar, as it is called, owes its origin to the ſame cauſe. It is clear and bright like alabaſter, but probably partakes more of the nature of the ſpar * that is found about lead, with which the country abounds. This pillar is the boundary of moſt people's curioſity, and is ſaid to have received its name from the unhappy princeſs when ſhe viſited that place. A ſtream of water runs along the middle; the noiſe of which, as it falls among the rocks, is re-echoed on all ſides, and adds to the aſtoniſhment of thoſe who viſit this vaſt concave. The place takes its name from Poole, a famous robber, who is ſaid to have lived in this ſubterraneous apartment, and whoſe kitchen and bedchamber they pretend to ſhew you, if you will take the pains to creep ten or a dozen yards upon your hands and knees.

WOKEY-HOLE, near Wells in Somerſetſhire, is a curioſity of the ſame nature as that we have been deſcribing. It is about two hundred yards

* This is a ſhining, ſtony, mixed ſubſtance, which Mr. Beaumont (in the Philoſophical Tranſactions) takes to be a kind of rock-plant, obſerving that it may be formed three ways; 1. either from ſteams alone; or, 2. from ſteams coagulating dew as it falls on the ground, or water iſſuing from the joints of rocks; or, 3. it may grow from earths and clays. Inſtances of the firſt kind are frequent in grottos, where ſpars produced from ſteams hang like icicles, from the ſides of which many times iſſue little plants ſhooting upwards, contrary to the tendency of the others. Of the ſecond kind are thoſe cryſtals (a ſort of ſpars) which are produced by a coagulation of dew falling on nitrous ſtones. And as to the third kind, Mr. Beaumont gives inſtances of it in the mines of Mendip hills, in ſome of which there is a ſteam incumbent upon the earth at the bottom, from whence ſhoot up little ſpires, which grow to the heighth of a man's finger, the biggeſt about an inch in diameter. Theſe ſpires begin on the tops to be congealed, and ſo gathering a cruſt downwards by degrees, they are at laſt turned into an abſolute white ſpar or ſtone.

in length, and the roof, in the higheſt part, is about eight fathoms from the floor, but in ſome places it is ſo low, that one muſt ſtoop to paſs. The people that ſhew this cave, point to ſeveral pretended figures of men and women, dogs, bells, organs, &c. which are owing to the ſame cauſe as thoſe in Elden-Hole, above-mentioned. A current of water runs through it, in which, it is ſaid, trouts and other fiſh have been formerly obſerved; but how they came there, it is difficult to conceive. The echo here is very ſurprizing; and the place, taken all together, ſeems awful and tremendous.

THE next wonder is what is uſually called the Devil's Arſe in the Peak, which is a large opening in the ſide of a ſteep mountain, almoſt in the form of an arch, being above thirty feet perpendicular, and more than twice that breadth at the bottom. There are ſeveral ſmall cottages built on each ſide within the entrance, whoſe inhabitants in a great meaſure ſubſiſt by guiding ſtrangers into the cavern. Its width ſoon diminiſhes, for after croſſing one ſtream of water, the roof gradually deſcends, till it is ſo low, that a man cannot ſtand upright under it; but ſtooping for a little way, and paſſing over another ſtream, you find it more lofty. Then proceeding on, you come to a third rivulet, where the rock ſtoops, as it were, almoſt to the ſurface of the water, and prevents all farther ſearch into theſe dark receſſes. The vault, in ſeveral places, makes a noble appearance, and being chequered with various-coloured ſtones, its beauty is admired by every ſpectator.

THERE is a mountain called Mam Tor, (that is, Mother Tower, or Mother Rock) which is reckoned among the Seven Wonders of the Peak, becauſe (ſay they) it is continually mouldering away, and produces other hills at the bottom of it, but

but is not at all diminiſhed itſelf. The matter is this: on one ſide of the mountain is a very large and ſteep precipice, the ſubſtance of which being a looſe earth mingled with ſmall ſtones, is continually crumbling and falling down, ſometimes in large quantities, when waſhed off by heavy rains, and thus contributes to raiſe a hill at the foot of it, the increaſe of which is eaſily perceived, though the great mountain is not ſenſibly diminiſhed: ſo that this is rather a Fictitious than a Real wonder.

BUXTON WELLS are alſo reckoned one of the Wonders of the Peak, which, beſides their medicinal virtues, have this ſurprizing particular, that within five feet of one of the hot ſprings, there ariſes a cold one. The hot waters of this place are preferred by Dr. Leigh and others to thoſe at Bath, the uſe of them never being attended with the ill conſequences which have ſometimes been experienced from the latter. The water is ſulphureous, and contains a ſmall quantity of ſaline particles, but none of vitriol; ſo that it is not fetid, but more palatable than moſt other medicinal waters; neither is it purgative, becauſe the ſaline parts are diſpenſed in ſuch ſmall proportions. The heat of it is equal to that of the blood or new milk, procuring a moderate perſpiration; and it is remarkable for gently relaxing the ſolids, ſo as inſtantly to take off the ſtiffneſs and wearineſs occaſioned by a journey. Theſe waters are often recommended by phyſicians, both for drinking and bathing, in moſt caſes that can be relieved by ſuch methods, particularly in ſcorbutic, rheumatic, or nervous diſorders. That they were eſteemed in the time of the Romans, appears from a high road or cauſey, and the ruins of the ancient Roman bath, which are ſtill to be diſcerned. The duke of Devonſhire has built a large and conve-

nient house here for the reception of strangers; the bath-room is arched over-head, and twenty people may bathe in it at a time. Besides the principal springs which are at the village of Buxton, there are many others that rise unregarded in the neighbouring inclosures, and on the sides of the hills, so that their number can scarce be known.

THE last wonder of this kind to be mentioned here, is Tideswell, or Weedenwell, a spring which, according to some writers, ebbs and flows regularly like the sea. That it does ebb and flow is certain, but it is at very unequal periods, sometimes not once in a day or two, and sometimes twice in an hour. The bason of the spring is about a yard deep, and the same in length and breadth. When it flows, the water rises with a bubbling noise, as if the air, which was pent up within the cavities of the rock, was forcing itself a passage by driving the water before it: or perhaps the spring may now and then receive an extraordinary supply from the overflowings of some internal body of water, lying upon a higher level.—But we leave this phænomenon to be explained by philosophers.

AT a village named Matlock, upon the banks of the Derwent, 10 miles to the north-west of Derby, are several warm springs, called Matlock Wells. To accommodate those who are directed to use them externally, a bath has been constructed, inclosed in a proper building, lined with lead, and large enough to receive eight or ten people at a time, who descend into it by steps made for that purpose. The water that supplies this bath, which is but just milk-warm, issues from a rock in a most delightful plain, about a mile in circumference, surrounded by rocky hills, and a rapid stream. These waters used internally, are said to attenuate, heat, and rarify the blood; externally, they are recommended

recommended in the rheumatism, and all disorders of the skin. These Wells are much frequented, and would be more so, were it not for the want of accommodations on the spot, and the stony mountainous road that leads to them.

As we are upon the subject of Springs, let us now consider those famous ones at Bath, in Somersetshire, the great place of resort for our nobility and gentry at certain seasons, not only for the cure of diseases, but for gallantry and diversion. The most renowned of these hot springs lie near the cathedral, and are collected into a square area, called the King's Bath, about 57 feet long and 40 broad, with a neat building before it, called the Pump-Room, for company to meet in who drink the water, which is conveyed thither by a pump from the bottom of the springs, where it is almost boiling hot*. The walls of the bath are full of niches, perhaps the work of the Romans. There is a parapet or balustrade, with a walk round it, and steps to descend into it at every corner.—Behind the south-wall of this bath is another, called the Queen's-Bath, which is a less square, being 25 feet long, and 24 broad. Its water, being borrowed from the former, is of a more moderate warmth.—In the south-west part of the town are two other baths; one called the Hot Bath, which is an oblong square 30 feet in length, and 13 in breadth; and the other the Cross Bath †, which is of a triangular form, and

* It is remarkable, that at the cleansing of the springs, when they set down a new pump, they constantly find great numbers of hazle-nuts, which Dr. Stukely supposes to be the relicks of the universal deluge: and leaves, like those of olives, come sometimes out of the pump of the Hot-Bath.

† In this bath, when the weather is very hot, there is sometimes observed a certain black fly shaped like a lady-cow, which

received its name from a croſs that formerly ſtood in the middle of it. The overflowing of this bath forms another for lepers and poor people; and a cold bath has alſo been erected by contribution at a ſpring beyond the bridge.

IN the King's-Bath there is the figure of king Bladud, with an inſcription underneath, intimating, that this prince found out the uſe of theſe baths three years before the coming of our Saviour. But though we cannot give entire credit to this inſcription, it is certain they were famous for their medicinal virtues in the time of the Romans. Ptolemy calls them the Hot Waters, and Antoninus mentions them under the title of Waters of the Sun, to the influence of which luminary their heat was ſuppoſed to be owing; but there is a much more rational way of accounting for this as well as their other qualities. Almoſt every one knows, that heat in any degree may be produced by a proper mixture of ſulphur and filings of iron, moiſtened with common water. Now the hills from whence the Bath waters flow, contain a large quantity of ſulphureous or bituminous matter and iron ore, which, impregnating the water as it paſſes through them, give it that Heat, Milkineſs, and Detergency, which it ſo eminently poſſeſſes.

IT is ſuppoſed, that for many hundred years, theſe waters were uſed only externally, by way of bathing; whereas, of late, the internal application of them has been found of extraordinary ſervice in many caſes *. They have a ſulphureous and ſteely

which lives under the water, and is ſuppoſed to come up with the ſprings.—The water of the Croſs Bath corrodes ſilver very faſt; and the Bath waters in general will prey upon iron, but ſeem to have no ſuch effect upon braſs.

* Though Drinking the Bath waters, as Dr. Jones aſſures us,

ſteely taſte, and are wonderfully grateful to the ſtomach, creating no heavineſs or nauſea, but raiſing the ſpirits, and procuring an appetite. They are of ſovereign uſe in rheumatiſms, old aches or pains, palſies, nervous diſorders, and in all complaints that are comprehended under the name of Cold Diſeaſes. In reſtoring decayed conſtitutions they are of ſurprizing efficacy, as they ſtrengthen the bowels, recover their loſt tone, and renew the vital heat. In a word, if they are not taken in too large a quantity *, and a proper regimen be obſerved, they are capable of performing wonders; though ſometimes, for want of care in theſe reſpects, the uſe of them is attended with ill conſequences, and their credit is unjuſtly called in queſtion.

THE Hot-Well, or water of St. Vincent's Rock near Briſtol, muſt not be paſſed over in ſilence. Not many years ſince, this ſpring lay open at the foot of the rock, and was covered by the ſalt water every tide; but the well is now ſecured, a good pump fixed in it, and a handſome houſe built near it, for the entertainment of diſtempered perſons.

us, was practiſed in his time, about a hundred and fifty years ago; yet the practice was afterwards ſo univerſally laid aſide, that it was not known at the reſtoration: nor was it till the year 1691, when Mr. George Long was ſurprizingly cured of a conſtitution broken with the gout and ſtone, by the internal uſe of theſe waters, that people in general began to drink them, as a great alterative, ſtrengthening, and balſamic medicine.

* The uſual quantity is from a pint to two quarts in a morning, according to the direction of the phyſician, who ſhould always be conſulted. The uſe of them for five or ſix weeks at a time is generally long enough, though many have drank them longer with good ſucceſs. Thoſe who drink too much commonly loſe their appetite, and bring upon themſelves a ſick ſtomach; but this is remedied by a few doſes of bitter wine in a morning, and a gentle purge.

This water is of excellent uſe in all ſcorbutic and inflammatory caſes, in hectic fevers, the diabetes, and all preternatural evacuations. It is of ſervice in the firſt ſtages of a conſumption, and corrects the acrimony of the juices, being of a ſoft alcaline quality, derived from the natural limeſtone with which it is impregnated. It is obſerved to retain its virtues longer than other medicinal waters, which makes the demand for it the greater by thoſe who cannot have recourſe to the fountain-head; and accordingly vaſt quantities of it are ſent in bottles, not only all over this kingdom, but to moſt parts of the trading world.

THE Spaw waters of Scarborough in Yorkſhire are now ſo celebrated, that great numbers of our nobility and gentry reſort thither annually, and the place ſeems to rival even Bath itſelf. They operate both by ſtool and urine, like the waters of Pyrmont in Germany, having an evident tincture of iron, vitriol, allum, and nitrous ſalt, to which laſt they owe their purgative quality. They create an appetite, promote digeſtion, and gently empty the bowels, without cauſing gripes, ſickneſs, or nauſea, which are frequently the effects of artificial purges. In all kinds of inflammations, in rheumatic and ſcorbutic caſes, and in any weakneſs of the ſpermatic or urinary veſſels, they are looked upon as a ſovereign remedy. They agree beſt with perſons of ſtrong nerves, and firm conſtitutions, but are not proper for thoſe who labour under paralytic, hyſteric, or hypochondriac diſorders, nor for thoſe who are ſubject to fits or convulſions —The waters of Cheltenham in Glouceſterſhire are reckoned much of the ſame nature.

HERE it may be proper to mention a remarkable accident that happened at Scarborough in December 1737, whereby theſe famous waters had like

like to have been entirely loſt. The ſpring was ſituated at the foot of a high cliff, part of which, about two hundred and twenty-four yards in length, and thirty-ſix in breadth, containing near an acre of paſture-land, was on a ſudden rent from the top of it, and having continued ſinking for ſeveral hours, at laſt ſettled about ſeventeen yards perpendicular below its former ſituation. By the preſſure of ſuch a vaſt weight, being ſome hundred thouſand tons, the earth and ſand beyond it towards the ſea, where people uſed to walk who came to drink the waters, roſe upwards for a hundred yards in length, near twenty feet above its former level. The Spaw-Houſe roſe with the reſt, but the water ſoon failed, and was gone. However, after diligent ſearch, the ſpring was again diſcovered, and upon trial, its virtues appeared to be rather increaſed than diminiſhed by this diſaſter.

BEFORE Scarborough became in vogue, Knareſborough, in the ſame county, was much frequented, and is ſtill remarkable for its mineral waters, of which there are four ſprings, not far diſtant from one another, but very different in their nature and effects.—The firſt is the Sweet Spaw, or Vitriolic Well, diſcovered about the year 1620, and allowed by phyſicians to be a ſovereign remedy in ſome particular diſtempers.—The ſecond is the Stinking Spaw, or Sulphur Well, the water of which is clear, but ſo fetid and nauſeous to the ſmell, that people are forced to hold their noſes when they drink it; but it is now chiefly uſed by bathing. It is ſaid to be good for the dropſy, ſpleen, ſcurvy, gout, rheumatiſm, and paralytic diſorders.—The third is a cold bath, called St. Mongah's, from a Scottiſh ſaint much honoured in thoſe parts.—The fourth is the Dropping Well,

the moſt famous of all the petrifying waters in England. It drops from a porous rock, and the ground upon which it fell, for twelve yards long, is now changed into ſolid ſtone. The little rivulet that runs from this well falls into the Nid, where it has formed a rock that ſtretches ſome yards into the river.

TUNBRIDGE WELLS, in Kent, ſhould not be omitted, now we are treating of medicinal waters. They are famous for their good effects in cold chronical diſeaſes, they ſtrengthen the nerves, and help digeſtion. In ſhort, their virtues, and the pleaſantneſs of the place, draw much company thither in the ſummer-ſeaſon.

THERE are ſeveral other ſprings in England remarkable for their healing qualities; but perhaps there is no greater curioſity of this kind than the Burning-Well, as it is called, at Ancliff, near Wigan in Lancaſhire. The water itſelf is cold, nor has it any ſmell; but there is a ſtrong ſulphureous vapour that iſſues out with the water, and makes it bubble up as if it boiled, which, upon applying a lighted candle to it, preſently takes fire, and the ſurface of the well is covered with a flame, like that of burning ſpirits. This flame will continue ſeveral hours in calm weather, and emits ſuch a heat, that meat may be boiled over it; but the water, when taken out of the well, will not burn at all.

IN ſeveral parts of Cheſhire are ſalt ſprings, particularly at Namptwich, Middlewich, and Northwich, which are called the Saltwiches, and alſo at Dimham, which is about ſix miles diſtant from each of the other towns. The depth of the pits ſeldom exceeds four yards, and is never more than ſeven. In two places in Namptwich the ſpring breaks out in the meadows, ſo as to fret away

away the grafs; and a falt liquor ouzes through the earth, which is mooriſh, to a conſiderable diſtance. The falt ſprings at Namptwich are about thirty miles from the ſea, and generally lie along the river Weaver: yet there is an appearance of the ſame vein at Middelwich, nearer a little ſtream, called the Dan than the Weaver. All theſe ſprings lie near brooks, and in meadow-grounds. The water is ſo very cold at the bottom of the pits, that the briners cannot ſtay in them above half an hour at a time, nor ſo long, without drinking frequently ſtrong waters. Some of theſe ſprings afford much more water than others; but it is obſerved, that there is more ſalt in any given quantity of water drawn from the ſprings that yield little, than in the ſame quantity drawn from thoſe that yield much. It is alſo very remarkable, that more ſalt is produced from the ſame quantity of brine in dry weather, than in wet. Whence the brine of theſe ſprings is ſupplied, is a queſtion that has never yet been finally determined: ſome have ſuppoſed it to come from the ſea, and ſome from ſubterraneous rocks of ſalt, which were diſcovered in theſe parts about the middle of the laſt century. It is not probable, that this water comes from the ſea, becauſe a quart of ſea water will produce no more than an ounce and a half of ſalt; but a quart of water from theſe ſprings will often produce ſeven or eight ounces.

THERE is likewiſe a remarkable ſpring of ſalt water at Barton, near Ormſkirk in Lancaſhire, where a quart of water will produce eight ounces of ſalt. In many parts of the coaſt of this county, the inhabitants raiſe great heaps of ſand, which, after having lain ſome time, they put into troughs full of holes at the bottom, pour water on it, and boil the lees into white ſalt.

But

BUT to return; the Mole, a river of Surry, after running ſeveral miles from its ſource, diſappears at the bottom of Boxhill, near Darking, and paſſes under ground into a place called the Swallow. This river has been ſuppoſed to run two miles under the earth to Leatherhead; but ſome later authors are of opinion, that the ſtream of the Mole is entirely loſt at the Swallow, and is not the ſame that riſes at Leatherhead, which forms another river, though, from a belief of its being the ſame, it obtained the ſame name.

HOLY-WELL, or St. Winifred's well, in Flintſhire, is famous for the wonderful cures it has effected, particularly upon cripples, who have frequently left their crutches there as monuments of their recovery. This fountain iſſues from a rock into a cavity formed like a baſon or ciſtern, in which the patients bathe. The water is remarkably cold, and the ſtream ſo large and rapid, that it turns ſeveral mills a little below its ſource. It is well known what extraordinary effects are produced by Cold Bathing; but many of the country people ſtill believe the cures wrought by this well are miraculous, and that it owes its origin (according to an ancient tradition) to the blood of a Chriſtian virgin named Winifred, who was beheaded here by a Pagan tyrant, becauſe ſhe would not yield to his unchaſte deſires.

MOFFAT WELLS, which ſpring from a rock near a town of that name in Annandale, are the moſt remarkable medicinal fountains in Scotland. There are two of them, not far from each other; the uppermoſt of which runs through whitiſh ſtones reſembling cryſtal, and the lower through blackiſh ones of the colour of antimony. Theſe waters are diuretic, emetic, and cathartic, powerfully removing all obſtructions of the bowels, and there-

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fore very good againſt the cholic and nephritic diſorders. They are alſo of ſervice to remove pains in the joints, and to heal ulcers, when outwardly applied.

WE ſhall conclude this account of natural caves and ſprings with obſerving, that near Penriſe, in Glamorganſhire, there is a promontory, which is the moſt weſterly point of the county, and is called Warmſhead Point; it ſtretches about a mile into the ſea, and, at half flood, the Iſthmus, which joins it to the main land, is overflown, ſo that it becomes then a ſmall iſland. Towards the extremity of this point, there is a ſmall cleft or crevice in the ground, into which, if duſt or ſand be thrown, it will be blown back again into the air; and if a perſon applies his ear to the crevice, he will hear diſtinctly a deep noiſe, like that of a large pair of bellows: theſe phænomena are attributed to the undulatory motion of the ſea, under the arched and rocky hollow of this promontory, which occaſions an alternate inſpiration and expiration of the air through the cleft.

MINERALS *and* FOSSILS.

AMONG the various metals and minerals produced in England, none is more conſiderable than its Tin; the greateſt part of the tin conſumed in Europe being procured from the mines in Cornwall. The chymiſts look upon tin as a ſpecies of imperfect metal, generated of two different ſeeds, viz. that of ſilver, and that of lead, which renders it a kind of compound of both; and accordingly it is frequently found both in lead and ſilver mines: but that it has alſo its own proper mines, thoſe in the county above-mentioned,

mentioned, as well as in Devonshire *, are an abundant evidence. It is not clear, how long the tin-mines have been discovered or worked; some carrying it so high as the time when the Phœnicians were a trading people. This however is certain, that the ancient Britons, if not the Romans, found their account in them; but they seem rather to have been neglected than improved by the Saxons. After the coming in of the Normans, the earls of Cornwall had vast revenues from these mines, especially Richard, brother to king Henry the third. The tinners were afterwards regulated in such a manner, as much contributed to encourage the adventurers, a charter being granted by Edmund, earl Richard's brother, with several immunities; who also framed and ratified with his own seal the Stannary laws †, laying a certain duty upon the tin, payable to the earls of Cornwall. King Edward the third confirmed, and even enlarged their privileges, and erected Cornwall

* Though very little tin is now dug in Devonshire, yet in king John's time there was more found in that county than in Cornwall, the coinage of Devonshire being then farmed for a hundred pounds per annum, whereas that of Cornwall yielded but a hundred marks. And according to this proportion, the tenth thereof, amounting to 16l. 13s. 4d. is at this day paid by the crown to the bishop of Exeter.

† These are laws relating to the tinners and tin-mines, which from Stannum (tin) are called Stannaries. In Cornwall there are five stannary-courts, which have their respective jurisdictions, and as many towns where the tin must be brought to be stamped, which stamping they call Coinage, for which a certain duty is paid. The stamp is the seal of the dutchy, and the towns are, Leskara, Lestwithiel, Truro, Helston, and Penzance. The coinage-towns in Devonshire are, Plimpton, Tavistock, Ashburton, and Chagford. When all the legal duties are satisfied, the tinner may sell his tin where he thinks fit; only, if the king or the duke of Cornwall have a mind to buy it, they have a right of pre-emption.

into

into a dukedom, with which he inveſted his ſon, Edward the Black Prince; and ſince his time, the heirs apparent to the crown of England (if eldeſt ſons) have enjoyed it ſucceſſively.

THE working of the tin-mines is very hard and difficult, not only by reaſon of the great depth to which they are ſometimes obliged to ſink their ſhafts or pits, even as low as threeſcore fathom; but alſo becauſe the rocks they ſometimes meet with, through which a paſſage is to be cut, are ſo hard, that the workman can ſcarce dig a foot in a week. The ſoft ſhaking earth found in theſe mines is alſo very troubleſome to the miners, on account of the unwholeſome vapours it exhales, and the currents of water that frequently iſſue from it. When the ore is dug and drawn out of the mine, it is there broke to pieces with large hammers, and then carried to a ſtamping-mill, where it is pounded ſtill ſmaller, and the water paſſing through, waſhes away the earthy parts, leaving the metallic ones behind. This done, they dry it in a furnace on iron-plates, and grind it to powder in a craſing-mill; after which they waſh it again, and dry it; and in this ſtate the metallic matter is called Black tin. To convert it into White tin, that is, into metal, they carry it to a furnace or blowing-houſe; where, by means of a charcoal fire, kept up by huge bellows worked by water, it is ſmelted; and when it is cold, they forge it, which is the laſt thing done to it in the works. Two pounds of black tin, when melted, yield about one of white.—It is remarkable, that the droſs or ſcoria ſcummed off the tin in fuſion, and melted down with freſh ore, runs into metal; and even the matter waſhed and ſeparated from the metal in the mill, being thrown up in heaps, after reſting ſix or ſeven years, will, by fetching

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it over again, (as they term it) yield as good tin as that of Germany.

IN no part of Europe is found richer copper than in Cornwall, though the mines have not been worked with conſiderable advantage much more than ſixty years. It is there diſcovered in a vaſt variety of ores, the moſt common of which is of a yellow braſs colour; but there are ſome red, ſome grey, ſome black, ſome blue, and ſome green: the black, blue, and green yield but little; the grey contains more metal than the yellow, and the red more than the grey. There are beſides, in moſt of the mines, conſiderable quantities of malleable copper, which, from its purity, the miners term Virgin Ore. This is combined and allayed with various ſubſtances; ſometimes with baſe cryſtal, ſometimes with a gravelly clay, and ſometimes with the ruſt of iron: its figure is alſo very various; ſometimes it is in thin plates, ſhaped like leaves; ſometimes in drops and lumps; ſometimes branched, fringed, or twiſted into wires; ſometimes it ſhoots into blades, croſſed at the top like a dagger; and ſometimes it has the appearance of hollow filagree: it has alſo been found in powder, little inferior in luſtre to that of gold; and likewiſe in ſolid maſſes of ſeveral pounds weight, maturated, unmixed, and highly poliſhed; and ſometimes in a congeries of combined granules. The water in which the copper ore is waſhed, has been lately diſcovered to make blue vitriol of the beſt kind; and the water which comes from the bottom of the mines, is ſo ſtrongly impregnated with copper, that was it detained in proper receptacles, it would produce great quantities of malleable copper, without any hazard or attendance, and with little more charge than the purchaſe of a much leſs quantity of the moſt uſeleſs old

old iron; which being immerſed in this water, will, in about fourteen days, produce more than its weight of what is called Copper Mud; whence may be obtained a great proportion of pure copper.

THERE is another mineral found in the tin-mines, called Mundick, which the tinners uſed carefully to ſeparate from the tin, becauſe it made it thick and curdy; whence it was thrown aſide and neglected, as of no value. In the laſt century, however, Sir Gilbert Clark and others began to make trial of the Mundick, and found it afforded as good copper as that of Sweden; and the work is now brought to ſuch perfection, that the copper extracted from this uſeleſs ore (as it was thought to be for many ages) is ſaid to bring in annually above 150,000 l.—The Mundick emits a ſuffocating vapour, very troubleſome to the miners; and yet it is found to be a good vulnerary; for they uſe no other remedy for their wounds, but waſhing them in water that runs from the Mundick ore.

IN the copper mines of this county, ſilver has been frequently found, and ſmall quantities of gold have been ſometimes diſcovered in the tin ore. Cornwall alſo produces lead and iron. Here are likewiſe a great variety of cryſtals, with a conſiderable number of ſemi-metals, as ſpeltre, bizmuth, zink, antimony, lapis caliminaris, black lead, and cobalt, a ſubſtance containing zaffer, ſmalt, and arſenic.

IN Cornwall are likewiſe ſome quarries of marble, and a ſtone called the Warming Stone, which, on being once heated, will continue warm eight or ten hours, and is ſaid to relieve ſeveral kinds of pain, eſpecially that which ariſes from the internal hemorrhoides. The ſwimming ſtone has alſo been found in a copper mine near Redruth,

ruth, a town not far from St. Ives Bay, on the north coaſt: it conſiſts of rectilinear lamina, as thin as paper, interſecting each other in all directions, and leaving unequal cavities between them; a ſtructure which renders the ſtone ſo cellular, as to ſwim in water. Here have likewiſe been found ſeveral kinds of the aſbeſtos, a ſtone ſo fibrous, that a kind of linen has been made of it, which fire would not conſume, and of which we ſhall give a more particular account in treating of the foſſils of Italy. *

LEAD, though found in various countries, abounds particularly in England; but of all the mines, thoſe in Derbyſhire and Somerſetſhire are the moſt remarkable. It will be ſufficient to take notice of thoſe in the laſt-mentioned county, which are in Mendip-hills †, and afford vaſt quantities of this uſeful metal. The ore ſometimes runs in veins, ſometimes diſperſed in banks, and often lies between rocks. Some of it is harder, ſome ſofter. There is a ſpar about it, which is white, tranſparent. and brittle like glaſs; and another ſubſtance they call Crootes, a white ſtone, ſoft, mealy, and marl'd with ore. That ore is beſt which is cleareſt and heavieſt; whereof thirty-ſix hundred will yield about a ton of lead. The ſoil about theſe mines is red and ſtony; and the ſtones that are waſhed by the brooks and ſprings are ponderous, and of a reddiſh colour.

* See vol. II. p. 25, 26, and 27.

† It ſeems any Engliſhman may work in theſe mines, who has not forfeited his right by ſtealing any ore or tools belonging to another workman. In caſe of ſuch theft, their cuſtom is very remarkable. The criminal is ſhut up in a ſlight hut, ſurrounded with dry furze, fern, &c. which being ſet on fire, he is permitted to break down the hut, and make his eſcape through the flame as well as he can, but muſt never work or be employed any more about the mines of that place. This they call Burning the Hill.

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THE Groovers (for ſo the miners are called, as the ſhaft of a mine is called a Groove) work in frocks and waiſtcoats by the light of candles, which, if they have air enough, will laſt three or four hours. They ſeldom meet with damps, but now and then water breaks in upon them; in which caſe they drive an adit, or new paſſage, upon a level, till it is dry. To empty the water out of the mines, they uſe leather bags that will hold eight or nine gallons a-piece, which are drawn up to the top by ropes. The tools they work with are ſo hardened, as to make an impreſſion upon the head of an anvil, and yet they often break them in an hour's time. When they meet with a black ſtone, they reckon it a bad ſign, as leading to a rock that will hinder their works; the nearneſs of which is alſo indicated by a ſhort brittle clay. Having got the ore out of the mine, they beat it ſmall, waſh it in a running ſtream, and ſift it in iron rudders. Then upon a hearth or furnace (which is made of clay or fire-ſtone, and ſet in the ground) they lay a quantity of oaken gads, which they light with charcoal, and blow with bellows worked by mens feet. When the fire-plate is hot, they throw the ore on the wood, which melts down into the furnace, from whence they take it out with an iron ladle, and caſt it upon ſand into what form they pleaſe. The ſmoke of the lead-works is a very great annoyance to the workmen, and ſubjects them to a mortal diſeaſe, as it does the cattle, if ſuffered to graze thereabouts. The trees that grow near them have their tops burnt, and their leaves and bark diſcoloured and ſcorched. But to prevent as much as poſſible the inconvenience of ſmoke upon a ſhifting wind, they have furnaces for melting the ore about five feet high, fixed upon timber,

timber, ſo as to be turned about like a wind-mill. In this they put the ore, with a ſtrong coal-fire upon it, and as it melts, it runs through a canal on one ſide, leaving the earth, ſtone and ſcoria, with the aſhes of the coals.

NEAR Wrinton, in this county, are mines of Lapis Calaminaris, or Calamine Stone, which is of ſome uſe in medicine *, but more in foundery, being uſed to convert copper into braſs. It is uſually dug out of the mines in ſmall pieces, having frequently eyes, and ſometimes veins of lead. When dug, it is waſhed in running water, which carries off the impure and earthy parts, leaving the lead, calamine, and other ſparry parts, at the bottom. It is then put into a ſieve, and well ſhaken in water; after which it is baked in an oven four or five hours, then beaten to powder and ſifted; and thus it is fit for uſe.——The manner of making braſs is this: the calamine being calcined, as above, and reduced to a fine powder, is mixed with ground charcoal, and incorporated into a maſs. Thus prepared, about ſeven pounds of calamine are put into a melting-pot, and over it about five pounds of copper; which is let down into a wind-furnace eight feet deep, and having remained there eleven or twelve hours, is converted into braſs. After melting, it is caſt into plates or lumps.

ABOUT Mendip-hills there is great plenty of Coal, which almoſt every one knows to be a black, ſulphureous, inflammable matter, dug out of the earth, and ſerving as common fuel. It is to be found indeed in moſt parts of Europe, but the Engliſh coal is of greateſt repute even in foreign countries, and makes a conſiderable article of

* It is aſtringent, deſicative, and deterſive; much uſed for taking off films from the eyes of horſes, &c.

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our commerce. The Mendip coal-mines, according to Dr. Beaumont, (who lived among thoſe hills, and was a curious enquirer into the works of nature) are very much ſubject to Fire-Damps *, by

* Mr. Jeſſop, in the Philoſophical Tranſactions, gives an account of four ſorts of damps in mines. The firſt and moſt common is that whoſe approach the workmen are ſenſible of by the flame of the candle's becoming orbicular, and leſſening by degrees, till it goes quite out; as alſo by their ſhortneſs of breath. Thoſe who eſcape ſwooning, receive no great harm thereby; but thoſe who ſwoon away, though they are not quite ſuffocated, are tormented with violent convulſions on their firſt recovery. The ordinary remedy is to lay the perſon down on his belly, with his mouth to a hole dug in the ground; but if this fail, they make him drink his fill of good ale; and if that will not do, they judge his caſe deſperate.—The ſecond is the Peaſe-Bloom damp, ſo called from its ſmell, which never happens but in ſummer-time, and is not found to be mortal. The miners in the Peak ſuppoſe it to proceed from the red trefoil-flowers, called by them Honeyſuckles, which grow thereabouts in great abundance.—The third is the moſt peſtilential and moſt ſtrange of all; for they ſay it is ſeen hanging to the roof of thoſe paſſages in a mine that branch out from the main groove, in a round form as big as a foot-ball, and covered with a ſkin like a ſpider's web. If this be broken by any accident, the damp immediately flies out, and ſuffocates all that are near it; therefore the workmen, by the help of a ſtick and a long rope, have a way of breaking it at a diſtance; after which they purify the place well with fire before they venture in again. They imagine it to be the ſteam ariſing from their bodies and the candles, which, condenſing in the higheſt part of the vault, at length contracts a film, corrupts, and becomes peſtilential. —The fourth, called the Fulminating or Fire-Damp, is a vapour, which, being touched by the workmens candles, preſently takes fire, giving a report like a gun, and producing all the effects of lightning. The ſmoke proceeding from this damp is of the ſmell and colour of that from gunpowder. It is ſometimes found in lead-mines, but moſt frequently in coal-pits.

Naturaliſts give us very ſurprizing accounts of the effects of damps, a few inſtances of which may perhaps be agreeable to the reader. In the Hiſtory of the Academy of Sciences, *ann.* 1710, we are informed, that a baker of Chartres, having

by which many men have been killed, maimed, or miſerably burnt. Some have been blown up at the mouth of the works; and the turn-beam, that hangs over the ſhaft of the pit, has been thrown

ing carried ſeveral buſhels of aſhes into a deep cellar, his ſon going down afterwards with more, the candle went out on the middle of the ſtairs; but having lighted it again, he went to the bottom, where he cried out for help, and they heard no more of him. His brother, an able youth, ran down after him, cried out he was dead, and was heard no more. He was followed by his wife, and ſhe by a maid, and ſtill it was the ſame. This ſtruck the whole neighbourhood with a panic, and no body cared to venture any farther, till a reſolute fellow, perſuaded the four people were not dead, would go down to their aſſiſtance, but he alſo cried out, and did not return. Upon this another man got a hook, and, without going to the bottom, drew up the maid; who having taken the air, fetched a ſigh, and died. Next day a perſon undertook to get up all the bodies with a hook, being let down by a rope on a wooden horſe, to pull up whenever he gave notice. He ſoon called, but the rope breaking, he fell into the cellar, and was drawn out dead preſently after. At length the phyſicians being conſulted, gave their opinion, that the aſhes or brands had not been well extinguiſhed, and the cellar (like the reſt in Chartres) abounding with ſaltpetre, the unuſual heat had raiſed a malignant vapour, which had done the miſchief; and that the remedy was, to throw in a good quantity of water. This being done, a dog and a lighted candle were let down, without injury to either; a ſufficient proof that the danger was over.

What Dr. Connor relates is ſtill more wonderful, viz. That as ſome people were digging in a cellar at Paris for ſuppoſed hidden treaſure, the maid went down to call her maſter, and found them all ſtark dead, but in their working poſtures, and ſeemingly intent on their ſeveral offices, one digging, another ſhovelling away the earth, &c. The wife of one of them was ſat down on the ſide of a hopper, leaning her head on her arm, as if weary and thoughtful; and a boy, with his breeches down, was evacuating on the edge of the pit. All of them, in ſhort, appeared in their natural poſtures and actions, with open eyes, but ſtiff as ſtatues, and cold as clay.

We ſhall conclude this note with an account of a remarkable damp in a well in the Iſle of Wight, as given us by Mr. Cook,

thrown off its frame by the violence of the blaſt. To prevent theſe miſchiefs the miners uſe no candles in their works but thoſe of a ſingle wick, ſixty or ſeventy to the pound, which give as great a light there, as thoſe of te nor twelve to the pound do in other places; and they always put them behind them, never preſenting them to the breaſt of the work.—The ſame learned naturaliſt obſerved, that ſome coal-veins were much more tinged with ſulphur than others; and ſpeaks of

Cook in the Philoſophical Tranſactions. In 1733 a farmer employed ſome workmen to ſink a well, who about eighteen feet from the ſurface, dug through a ſtratum of a mineral mixture without any inconveniency; nor were they at all incommoded in carrying on the work, till about twelve days afterwards, when towards the evening they were annoyed with a faint ſuffocating heat, which as they were drawn up, was moſt remarkably perceived againſt the mineral ſtratum above-mentioned. The next morning a young man letting himſelf down by a rope, as ſoon as he came over-againſt the ſame ſtratum, became incapable of ſuſtaining his own weight, fell to the bottom, and died immediately. Another young man, not ſuſpecting the cauſe, having ſeated himſelf acroſs a ſtick fixed to the rope for that purpoſe, was let down to his friend's aſſiſtance; but when he came to the ſame depth, he was obſerved to give the rope a great ſhock, felldown as the other had done, and ſoon expired. A third perſon, being tied faſt in a large baſket, was let down more warily; and when he came to the ſame ſtratum, finding himſelf almoſt ſuffocated, he cried out, and was drawn up again immediately; but remained in the air near half an hour, pale, panting, and ſpeechleſs. In three hours time the dead bodies were drawn up, but brought up ſuch a diſagreeable ſtench along with them, as made ſeveral of the workmen vomit. The next day a cat was let down, and at the ſame place was ſeized with convulſions; but being drawn up again, quickly recovered. The well was left open about eight months, in hopes the damp would leave it; but it became worſe, riſing even to the top, where it appeared like a thin white fog when the air was moiſt, and in a dry air could be perceived like a warm breath, always diffuſing a ſulphureous ſtench, affecting people with giddineſs, ſhortneſs of breath, and a propenſity to vomit: ſo that at laſt the well was filled up, being not only uſeleſs but offenſive.

one that was wrought in these mines, which had received such a resplendency from its sulphureous tincture, that in all its points it seemed as if it was covered with leaf gold. He adds, that in one of these works two or three hundred weight of very good lead-ore was found growing to a vein of coal, which was reckoned a great rarity, none having ever been met with in a coal-pit before, the sulphureous spirit being there generally too strong for the generation of that metal.

FROM these mines, and those of Kingswood in Glocestershire, the city of Bristol is supplied with coals; but no part of England affords such prodigious quantities of this serviceable Mineral as the Pits about Newcastle upon Tine. It is almost impossible to express the vast trade which this town carries on in this single article; for their coals are not only sent by sea to many other parts of England and Scotland, but also to Holland, and in time of peace to France and Flanders; and being thus brought to us by shiping they are commonly called Sea-Coal, though Pit-Coal is the more proper name. But to give the reader a just idea of the wonderful consumption of Newcastle coal, we need only inform him, that from this inexhaustible source the city of London is supplied, which alone is reckoned to consume annually at least 600,000 chaldrons, each chaldron containing six and thirty bushels. Nor should we forget the coal-pits near Whitehaven in Cumberland, which is the most eminent port in England for its coal-trade, Newcastle excepted. From hence the city of Dublin, and all the Towns of Ireland on the coast, as well as some parts of Scotland and the Isle of Man, are chiefly supplied: so that in time of war, or upon account of contrary winds, it is no uncommon thing to have

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two hundred ſhips at once ſet ſail from this place for Dublin laden with coals.

UNDER this article we ought not to omit a remarkable ſort of coal, called Cannel or Candle-Coal, which is found in ſome of the northern counties, particularly in Lancaſhire. It is gloſſy and light; apt to cleave into thin flakes; and, when kindled, yields a continual blaze till it is conſumed to aſhes. Its hardneſs makes it capable of being poliſhed, and then it looks like marble; ſo that ſtandiſhes, cups, candleſticks, &c. are frequently made of it: nor will it ſoil the fineſt handkerchief, though it is as black as jet.

THERE is another uncommon kind of coal dug up in Staffordſhire, called Peacock-Coal, becauſe, when turned to the light, it ſhews all the colours in the peacock's train; but it is too ſoft to be poliſhed.

THERE remains yet a moſt uſeful metal to be mentioned, of which our iſland affords no ſmall quantities, I mean Iron: this indeed, with reſpect to real uſefulneſs is the moſt valuable of all the metals, and is therefore the moſt common. It conſiſts of an earth, ſalt, and ſulphur, but all impure, ill-mixed, and ill-digeſted; which renders it extremely liable to ruſt. It is the hardeſt, drieſt, and moſt difficult to melt of all metals. It may be ſoftened by heating it often in the fire, hammering it, and letting it cool of itſelf; and it is hardened by being extinguiſhed in water.—Of all the iron works in England, thoſe in the foreſt of Dean in Glouceſterſhire are in moſt repute. The ore is found there in great plenty, differing much in colour, weight, and goodneſs. The beſt, called Bruſh Ore, is blueiſh, very ponderous, and full of little ſpecks that ſhine like ſilver. This affords the greateſt quantity of iron, but if melted alone the metal is

very brittle, and therefore not ſo fit for common uſe. To remedy this, they mix with it a due quantity of Cinder, (which is the refuſe of the ore after the metal has been extracted) and this gives it ſuch an admirable temper of toughneſs, as makes it equal to any that is brought from foreign countries.—After they have dug up the ore, their firſt buſineſs is to calcine it, which is done in kilns, much like our ordinary lime-kilns. Theſe they fill to the top with coal and ore, a layer of each alternately; then ſetting fire to the bottom, they let it burn till the coal is waſted, and renew the kilns with freſh ore and coal in the ſame manner as before. This does not melt the metal, but conſumes the more droſſy part of the ore, and makes it malleable; ſerving inſtead of the beating and waſhing uſed with other ores. After this operation it is carried to the furnaces, which are built of brick or ſtone, about thirty feet high, and ſomewhat reſembling the ſhape of an egg, being about ten feet wide in the middle, but much narrower at the top and bottom. Behind the furnace are fixed two huge pair of bellows, the noſes of which meet at a little hole near the bottom: theſe are worked by a large wheel turned about by water, and are ſo contrived as to play alternately, the one giving the blaſt whilſt the other is riſing. The furnace is filled with ore and cinder, intermixed with charcoal, which being ſet on fire, the materials run together into a hard cake or lump; and the metal, as it melts, trickles down into receivers at the bottom of the furnace, where there is a paſſage open for the men to take out the ſcum and droſs, and let out the metal as they ſee occaſion. Before the mouth of the furnace lies a great bed of ſand, wherein they make furrows of what ſhape they pleaſe; and when the receivers are full the metal is let into

into them, which is made so very fluid by the violence of the fire, that it not only runs to a considerable distance, but keeps boiling a good while afterwards. In this manner they keep the furnaces constantly employed for many months together, never suffering the fire to slacken night or day, but still pouring in at the top a fresh supply of ore and fuel, which in these works is always charcoal. And from hence the sows and pigs of iron, as they call them, are carried to the forges, where they are wrought into bars.

WE must not leave this part of natural history without taking notice of a fossil earth, commonly called Fuller's Earth, which seems almost peculiar to England, and is of great use in the woollen manufacture*. Plenty of it is dug up near Brick-Hill in Staffordshire; also near Ryegate in Surry, near Maidstone in Kent, near Petworth in Sussex, and near Wooburn in Bedfordshire. It is a fatty kind of earth, abounding in nitre; and is so necessary to the well dressing of cloth, that though foreigners may procure our wool in a clandestine manner, they can never come up to the perfection of English cloth without Fuller's-Earth, the exportation of which is therefore made equally criminal with that of wool.—Abroad they make great use of urine instead of Fuller's-Earth.

THE subterraneous productions already mentioned (to which we may add marble, free-stone, &c.) are some of the most useful that our island affords; nor can we be more particular on this head, without exceeding our intended limits. But there is a great variety of fossils to be found in the bowels of the earth, which though of no

* It is also reckoned a great improver of land. When dissolved in vinegar it disperses pimples, checks inflammations, and cures burns.

apparent ſervice to mankind, excite our admiration, and afford matter for curious ſpeculations and enquiries. By theſe we do not mean the native foſſils, which have their ſeveral uſes, and will be occaſionally taken notice of in the courſe of this work; but thoſe of the adventitious or foreign kind, which have not been generated in the earth, but repoſited there by earthquakes, deluges, or ſome other extraordinary cataſtrophe. Theſe are trees *, plants, ſhells, bones, teeth, &c. both of ſea and land animals, which are found in great abundance in ſeveral parts of the earth. Sometimes we find whole beds of ſhells †, either of the ſame or of different kinds; ſometimes fiſhes petrified; and the branches and leaves of trees, ſea-

* Some time ago there were found in England, at the depth of above a hundred feet, ſeveral huge oaks, remaining entire with their branches. They had contracted a blackneſs equal to that of jet, and a hardneſs far ſurpaſſing that of any living oak. How theſe trees ſhould come there, unleſs by a ſubverſion of the whole globe at the time of the flood, it is difficult to conceive.—Mr. Boyle mentions a vaſt oak dug out of a ſalt mine in Tranſylvania, ſo hard, that it could not eaſily be wrought on by iron tools; which yet, by being expoſed to the air, became ſo rotten in four days, as to crumble between the fingers: and Mr. Derham obſerves the ſame of the trees turned out of the earth by the breaches at Weſt-Thurrock and Dagenham.—M. de la Pryme is of opinion, that the trees which are found under ground in Hatfield Chace in Yorkſhire, and in the Moraſſes and fens in ſeveral other counties, were cut down by the Romans, in order to diſlodge the Britons who uſed to ſhelter themſelves in the thick marſhy woods, and ſally out as opportunity offered to intercept their proviſions and diſturb their garriſons.

† We have a remarkable inſtance of this kind near Reading in Berkſhire, where a continued ſtratum or layer of oyſter-ſhells is found at a great depth from the ſurface of the earth. They lie in a bed of greeniſh ſand, upon a hard rocky chalk, and are often dug out entire by the men who work in the chalk pit, and thoſe who viſit the place out of curioſity. The ſhells are brittle, and eaſily ſeparated from each other; but nothing

ſea-moſſes, &c. either petrified or impreſſed on ſtones in their perfect ſhape and proportion. Theſe extraneous foſſils have very much employed the thoughts of our latter naturaliſts, who find it no eaſy matter to account for the ſurprizing Phænomina of petrified ſea-fiſhes in places far diſtant from the ſea, and even on the tops of mountains; ſhells in the midſt of quarries of ſtone; elephants teeth, and bones of animals peculiar to the ſouthern climates, and plants only growing in the eaſt, found in our northern and weſtern parts. The common opinion is, that the foſſils of this kind were buried in the earth at the time of the univerſal deluge; but ſome think they are only the effect of a Luſus Naturæ, the mimickry or wanton productions of nature.

DR. WOODWARD, in his Natural Hiſtory of the Earth, ſeems to have ſet this matter in a pretty clear light, though his ſyſtem is liable to ſome objections. He imagines, that the whole maſs of earth, with every thing belonging thereto, was ſo broken and diſſolved at the time of the flood, that a new earth was formed in the boſom of the water, conſiſting of different ſtrata or beds of matter, ranged over each other, nearly according to the order of their ſpecific gravities*. By this

is found within them, except now and then ſome of the green ſand abovementioned. What makes this the more wonderful is the diſtance of the place from the ſea, which is not leſs than forty or fifty miles; ſo that they are generally ſuppoſed to have been left there by the univerſal deluge.

* Dr. Leigh, ſpeaking of the coal-pits in Lancaſhire, denies the ſtrata to lie according to the laws of gravitation. This induced Mr. Derham to make a nice enquiry into the matter; and accordingly he cauſed divers places to be bored, laying the ſeveral ſtrata by themſelves, and afterwards weighed them with great accuracy to determine their ſpecific gravities. The reſult was, that in his yard the ſtrata were ſpecifically

means plants, animals, (especially fishes) shells, bones, &c. not yet dissolved among the rest, became blended with the mineral and fossil matters, which either preserved them entire, or assumed and retained their figures and impressions. He farther supposes, that these strata were originally parallel, even, and regular, and rendered the surface of the earth perfectly spherical; but that towards the end of the deluge, they were broken on all sides of the globe, and their situation varied, being elevated in some places and depressed in others; whence mountains, valleys, islands, &c. and those vast cavities into which the waters retired and formed the ocean. In a word, the whole terraqueous globe (according to the Doctor) was put, by this disruption of the strata, and the depression of some and elevation of other parts, into the condition wherein it now appears.

BUT though most of the fossils resembling shells, plants, &c. may reasonably be supposed to owe their origin to the universal deluge, there are some which are probably native stones or rock-plants, and not parts of animals, or plants petrified, as many naturalists have imagined. The Trochitæ; or Trochites, for instance, vulgarly called St. Cuthbert's Beads, seem to be of this kind. They are commonly of a dark colour, glossy and shining when broken, and are easily dissolved in vinegar. Their figure is generally

fically heavier the lower they went; but making the same experiment in his fields, he could not perceive any difference in the specific gravities of the several strata. Having acquainted the Royal Society with this, their operator Mr. Hawksbee was ordered to try the strata of a coal-pit, which he did to the depth of thirty feet; and found (as appears from the account he gives us in the Philosophical Transactions) that they lay in no manner of order as to their gravities, but confusedly, as if the mixture was purely casual.

cylin-

cylindrical, sometimes a little tapering, and the flat ends are covered with fine radii drawn from a hole in the middle to the circumference. Several of these are sometimes joined together, in such a manner, that the rays of one enter into the furrows of another. They are found in some parts of Yorkshire, and also in Mendip-Hills, sometimes scattered here and there, and sometimes in large beds, and of various sizes. Mr. Beaumont (in the Philosophical Transactions) assures us, that all the cliffs in some mines are made up of these stone-plants; and that they are found growing in the gritty clay, some of them yet crude and soft, others of the consistence of lime-stone, others still harder, with the evident beginnings of circles and sutures, and others become perfect spar, which is their state of muturity. Many of these, as to the curiosity of their make, may vie with any of the vegetable kingdom, having roots, stem, branches, joints, an inward pith, and sometimes cells, to supply the place of veins and fibres.

The Astroites, or Star-Stone, which is found about Shugbury in Warwickshire, near Belvoir-Castle in Lincolnshire, and in several parts of the north of England, is a curiosity of the like nature. Their form is very regular, consisting of several thin pentagonal joints set one over another, so as to make a kind of five-angled column. To this species of bodies may also be referred the stone called Cornu Ammonis, which, according to Dr. Beaumont, is frequent in the clay wherein the Trochitæ are produced, and at its first appearance looks like a young cock's spur, but grows to the length of seven or eight inches, though few of that bigness are to be found entire. Dr. Woodward however is of a different opinion, asserting it to be a shell of the Nautilus kind, formed in the

ſea, and carried thence by the waters of the deluge. It is rough, knotty, and twiſted like a ram's-horn, whence its name, Jupiter Ammon being worſhipped by the ancient people of Libya under the form of a ram. The Cornu Ammonis, and the Aſtroites, being immerged in vinegar or the juice of lemons, will move about as if they were alive; the reaſon of which is, that the acid, by inſinuating itſelf into their pores, makes way for the introduction of a warmer air than what was lodged therein before; which being immediately dilated, and ſtruggling to diſengage itſelf, occaſions a tremulous motion in thoſe bodies.

UNDER this article, as we are ſpeaking of ſtones, it ſeems proper to mention a curioſity in Ireland, about eight miles from Colerain, which has obtained the name of the Giant's Cauſeway, though it is evidently the work of nature. It conſiſts of many thouſand pillars, moſt of them ſtanding perpendicular to the plane of the horizon, and very cloſe to each other. Moſt of them have five ſides, ſome ſix, and others ſeven, and yet their contexture is ſo adapted, that there is no vacuity between them. They are from fifteen to twenty-four inches in diameter, and are compoſed of ſeveral joints or pieces of different lengths, the convex end of one being exactly fitted to the concavity of another. The ſides of the pillars, which touch each other, are of a whitiſh free-ſtone colour, but upon breaking off ſome pieces, the inſide appears like dark marble, pretty muſt reſembling that which the ancients called Baſaltes. This Cauſeway runs from the bottom of a precipice into the northern ocean, how far is not known; but at low water it is viſible at leaſt ſix hundred feet in length, the breadth in the wideſt place being about two hundred and forty feet, and in the narroweſt

narrowest a hundred and twenty. In some parts it is fifteen or twenty feet, in others six and thirty, above the level of the Strand.

VEGETABLES.

WE come now to consider some of the vegetable productions of our island, which in general being so well known, we need only describe a few of the most remarkable. We shall begin with saffron, which is chiefly cultivated about Walden in Essex, from whence the town is generally called Saffron-Walden. It rises from a bulbous root, and blossoms in September and October. Its leaves are long, narrow, thick, and soft to the touch; and its flowers, which sometimes appear before the leaves, and sometimes after them, are of a pale purple streaked with whitish lines; but towards the bottom of the petal the purple is deeper. From the middle of the flower arise three flame-coloured stamina or chives, crowned with their apices; and under these is the ovary or pistil of the plant, wherein the seeds are formed. From the upper part of the ovary arises the style, a slender tube inclosed within the fistular part of the flower where it is of a whitish colour, but changes into yellow before it divides into three parts opposite to the tops of the stamina. These three stylets (or darts, as some call them) are the true saffron of the shops, for the sake of which alone the plant is cultivated. When the flower is gathered, they separate the stylets, and dry them in sieves by a gentle fire, or on a little kiln made for that purpose. It is remarkable, that though every flower seems to yield so little, an acre of ground will produce about a hundred pounds of wet saffron, which will weigh twenty

pounds when dried and fit for use. They usually plant it three years in one piece of ground, and then remove it to another. The English saffron is reckoned the best in Europe *.

WOAD, which is much used in dying blue colours †, is produced from a plant called Glastum, whose leaves resemble those of ribwort-plantain. It is much cultivated in Bedfordshire, where they order it in the following manner. The seed is sown annually in the spring, and the leaves are cropped for the first time about the middle of May, and perhaps three or four times afterwards, especially in a wet summer, though the best is produced in a dry season. The first crop excels all the rest in goodness, every one after it being gradually worse. When gathered, the crop is ground small in a mill, and having laid eight or ten days in heaps, it is made into balls, which are dried on hurdles, and then ground to powder. This done, it is spread on a floor and watered, which is called Couching; and then by turning it every day it is silvered, that is, rendered perfectly dry and mouldy, when it is put up in bags for the dyer's use.

THE Hop, a plant of the reptile kind, whose flower is a principal ingredient in malt-liquors ‡, is

* Good saffron is known by its agreeable smell, being velveted over with a fine red, and free from yellow threads. It is used both in food and medicine, to chear, fortify, and resolve. It is an excellent cordial, and a sure promoter of a diaphoresis.

† The ancient Britons used to dye their bodies with a tincture of this plant, to make them appear formidable to their enemies, or perhaps to defend them against the inclemency of the weather.

‡ The use made of hops in the liquor drank in cold countries, and the manner of raising them on poles, has given the plant the appellation of the Northern Vine. By this ingredient,

is cultivated in several parts of England, especially in Kent and Surry. This plant creeps upon the ground, unless it finds pales or shrubs to hang to, or is supported by poles stuck in the ground for that purpose, which is the method used in the hop-gardens. Its stem is long, flexible, rough, and hairy; its leaf indented like that of the vine, and covered with a kind of prickly down; and its flowers, which grow in a sort of bunch or cluster, are of a greenish yellow, resembling those of the female elm, both as to form and size. The flower contains a blackish bitter grain, which is the seed of the hop; but it is usually propagated by sets, eight or ten inches long, having each three or four joints. These are set in holes about a foot square, one at each corner, and a fifth in the middle; and these little plantations, which are formed into a kind of hillocks, are made at the distance of six or eight feet from one another. When the hops are two or three feet above ground, they are conducted and tied to the poles, but not so close as to hinder their climbing; and about Midsummer, when they begin to branch, such as have not reached the tops of the poles should have their heads nipped off, that they may branch the better. They blow towards the end of July, and the forward ones are ripe by the close of August.

dient, which affords a subtile grateful bitter, our beer is preserved to a great age, being prevented thereby from running into such cohesions as would make it ropy, vapid, and sour. It also divides and subtilizes the viscid parts of the malt, and so renders them more easy of digestion and secretion in the body.—The heads and tendrils of the plant purify the blood in the scurvy, and most cutaneous diseases; decoctions and syrups made of the flowers are good against pestilential fevers; juleps and apozems are also prepared with them for hypochondriacal and hysterical affections, and to promote the menses.

Their

Their ripeneſs is diſcovered by their fragrant ſcent, their changing colour, being eaſily pulled, and by the browniſh colour of the ſeed. If they are over-ripe, they will be apt to ſhed their ſeed, wherein their chief ſtrength conſiſts; nor will they look ſo green, but ſomewhat brown, which much leſſens their value. When gathered, they are dried on a kiln, and about a month afterwards are packed up in bags, wherein they will keep ſeveral years.

BUT perhaps none of our vegetable productions (except thoſe which furniſh us with bread, the moſt neceſſary part of our food) are of greater and more univerſal uſe than Flax and Hemp, which are plants of much the ſame nature, though the firſt is abundantly finer, and employed in more beautiful manufactures.—Flax is a plant with a ſlender hollow ſtem, uſually about two feet high, whoſe bark conſiſts of fibres or threads, which being dreſſed and worked in a proper manner, affords us that valuable commodity, Linen-Cloth, which we now make to very great perfection; and the Iriſh in particular have, of late years, improved that manufacture to ſuch a degree, that they export great quantities of it to England, and to the Britiſh colonies in America. Flax thrives beſt in a ſoil that has long lain fallow, and the ſeed muſt be ſown thick in a warm ſeaſon, about the end of March, or the beginning of April *. Flax pulled up in the bloom is whiter and ſtronger than that which ſtands till the ſeed is ripe. Inſtead of ſteeping it in a ſtanding water, (as they do

* The ſeed of Flax, called Linſeed, enters into the compoſition of divers medicines, and yields an oil by expreſſion which has moſt of the properties of nut-oil, and, in defect of that, is frequently uſed in painting. That drawn cold is reckoned good in ſeveral diſeaſes.

hemp)

hemp) it is usually exposed alternately to the damps of the night and the heat of the sun, from whence it receives a finer colour; after which it is well dried, and undergoes much the same preparations as hemp to fit it for spinning.—Hemp grows much taller than flax, rising into a slender sort of shrub, with a hollow stem, and the leaves a little jagged. Its seed * (which is well known) grows on the top of the stem, but is only produced by hemp of the male kind, commonly called Karl, as the female is called Fimble. But the most valuable part is its fibrous bark, which, after undergoing various operations, yields us thread, cloth, cordage, &c. The seed is usually sown in May, and the plant is fit to gather in August, its ripeness being indicated by the stalks turning white, and the leaves yellow. The way of gathering it is to pull it up by the roots, after which it is tied up in bundles, and laid to steep in a pool, or other stagnant water, to rot the bark; which done, it is taken out again, and well dried. It is then crushed with an instrument called a Brake, to break the dry bun or hex, which is the inward substance of the stem; and when it is thus reduced to such a state, as to hang together in small shivers, these are separated from the bark by beating it with a swingle, a piece of wood edged for that purpose. The next operation is to beat the hemp on a block with beetles, till it be sufficiently soft and pliable; after which it is heckled, that is, drawn through several toothed instruments of different fineness, whereby the shorter tow is separated, and the rest is fit for spinning, weaving, &c. —Upon the whole, it is surprizing to consider

* A decoction of hemp-seed in milk is recommended against the jaundice. The leaves are said to be good against burns, and the juice thereof against deafness.

what

what numberleſs advantages mankind enjoy from the two little plants we have been ſpeaking of, and even from their bark alone. This affords us a part of attire which accommodates us day and night, and is not only neat and convenient, but contributes much to the health of our bodies. From hence we have thoſe ſpreading ſails, by the help of which our ſhips are wafted to the remoteſt parts of the globe; and from the ſame bark the ropes by which they are managed, and the ſtrong cables for their anchors, ſo neceſſary to their ſecurity. In a word, the materials formed from the rind of theſe plants are of conſtant and univerſal uſe in domeſtic affairs, huſbandry, commerce, and moſt arts and manufactories.

SOME perhaps might think us guilty of an unpardonable omiſſion, if we ſhould forget to mention the famous Hawthorn at Glaſtonbury, in Somerſetſhire, ſaid to put forth bloſſoms every Chriſtmas-day, and to have firſt taken root there from a ſtaff which Joſeph of Arimathea fixed in the ground. That there was a thorn near Glaſtonbury, which in very mild winters uſed to bloſſom about that time of year, is undoubtedly true; but the report of its blooming always exactly on Chriſtmas-day is entirely groundleſs. The tree was cut down long ago, (ſome time in the laſt century) but ſeveral branches of it were planted in the neighbourhood, which grew and bloſſomed like the old one, and are ſtill to be ſeen in the gardens of the curious *.

* Mr. Ray, an excellent botaniſt, was of opinion, that this miraculous thorn (as many have looked upon it to be) differed only accidentally from the common Hawthorn.

ANIMALS.

FROM Vegetables we now proceed to Animals; but as an account of thoſe which are well known amongſt us (how ſurprizing ſoever they might appear to ſtrangers) would be inſipid and tireſome to an Engliſh reader, we ſhall not ſpend much time on this head, reſerving room for a more particular deſcription of ſuch creatures as are peculiar to foreign countries, and therefore more apt to excite our admiration.—In the firſt place, we think proper to mention a curioſity, which perhaps has not been taken notice of by any author; but the truth of it we have heard atteſted by a perſon of veracity, who was himſelf an eye-witneſs of what he relates. There is (he ſays) in the poſſeſſion of a certain family near Highworth, in Wiltſhire, an uncommon breed of geeſe, which the owners take ſo much care to preſerve to themſelves, that they would ſcarce part with an egg upon any conſideration. Theſe geeſe they nurſe up and fatten in ſuch a manner, that they grow to a very extraordinary, and almoſt incredible ſize, inſomuch that ſome of them will weigh twenty, five and twenty, and even thirty pounds. They are uſually beſpoke by gentlemen who have the curioſity to grace their tables, and entertain their friends with ſuch a noble diſh; and conſidering the rarity of the fowl, as well as the expence of feeding them, the price of one ſhilling a pound, which is the loweſt they are ſold at, does not ſeem extravagant.

HAVING mentioned this uncommon ſort of tame geeſe, it naturally leads us to deſcribe a remarkable ſpecies of wild ones called Solan Geeſe, which, at a certain ſeaſon of the year, frequent ſome

ſome of the iſlands on the coaſt of Scotland, and particularly a ſmall one called the Baſs*, which is little elſe but a rock, about a mile in circumference. Incredible flocks of theſe fowl reſort hither in the ſummer, a few always coming beforehand, as if it were to chuſe their habitations, which for that reaſon are termed Scouts. The people there take care not to diſturb them till they have built their neſts, after which they are not to be frightened away by any noiſe whatever. They lay but one egg, which they hatch by holding it faſt under one foot, and ſeldom leave it till that is done. Conſiderable profit is made by their feathers, as well as by their fleſh, which is reckoned a dainty; but as they are exceeding fat, and taſte like herring, which is their chief food, it is hard to conceive how they can be ſo delicious. Whither theſe birds retire in winter is not known.

ACCORDING to Mr. Martin, ſeveral of the weſtern iſles of Scotland are alſo frequented by vaſt numbers of ſolan geeſe, particularly St. Kilda, Soa, and Borera. The rocks of St. Kilda are in ſummer-time totally covered with ſolan geeſe and other fowl, and appear at a diſtance like ſo many mountains covered with ſnow. The neſts of the ſolan geeſe, not to mention thoſe of other fowl, are ſo cloſe, that when one walks between them, the hatching fowls on either ſide can always take hold of one's cloaths; and they

* This little iſland was formerly in the poſſeſſion of the Lawder family, but was purchaſed by king Charles II. and annexed to the crown. It is inacceſſible on all ſides, except by one narrow paſſage, at the top of which there was a fort mounted with cannon, which has been neglected ever ſince the revolution. At that time it was ſurprized by ſome of king James's party, and held out for him the laſt of any place in the three kingdoms.

will

will often ſit ſtill till they are attacked, rather than expoſe their eggs to the danger of being deſtroyed by the ſea-gulls; at the ſame time an equal number fly about, and furniſh food for their mates that are employed in hatching. Theſe ſolan geeſe obſerve their prey from a conſiderable height, and dart down upon it with incredible force. The common amuſement of the herring fiſhers ſhews the amazing ſtrength of this fowl: they fix a herring upon a board, which has a ſmall weight under it, to ſink it a little below the ſurface of the ſea; when the ſolan geeſe obſerving the fiſh, darts down upon it perpendicularly, with ſuch force, that he runs his bill irrecoverably through the board, and is taken up directly by the fiſhers. The ſolan geeſe of theſe weſtern iſlands almoſt equal a tame gooſe in ſize, and are not ſo large as thoſe of the baſs, juſt mentioned, which are bigger than the land gooſe. The bill of this fowl is long, ſharp, and a little crooked at the point; his colour, except a little black on the extremities of the wings, is white when a year old, but before that age, a dark brown. The St. Kildians kill a ſolan gooſe with great expedition, by diſlocating a certain joint of the neck, very near the head; for the reſt of the neck being made for ſtrength, it would, without this art, be difficult to kill them.

THE inhabitants of theſe little iſlands annually take about twenty thouſand of theſe fowls, which they keep in ſtorehouſes built for that purpoſe; and the St. Kildians keep their eggs in the ſame places; and though, after ſtaying there ſome months, they ſmell moſt offenſively, ſuch is the force of cuſtom, that they eat them raw with a keen appetite, and eſteem them a good pectoral. The fat of the gooſe is an excellent vulnerary,

and

and when boiled in water-gruel, they reckon it a ſpecific againſt coughs.

THE neſt of the ſolan geeſe, ſays the Rev. Mr. Macauley, is a large collection made up of very different materials, he carries any thing that is fit for his purpoſe, whether at land, or floating on the waters, to the place where he builds, graſs, ſea-weeds, ſhavings of timber, pieces of cloth, and frequently what he muſt have got in ſome foreign land; yet ſuch is the difficulty in furniſhing a ſufficient quantity of theſe different materials for building, that they often encroach on their neighbour's property; and the manner in which they do it, ſhews that want has given them notions of property unknown among fowls, where they have plenty: thus if a ſolan gooſe, ſays our author, finds his neighbour's neſt at any time without the fowl, he takes advantage of his abſence, ſteals as much of the materials as he can conveniently carry, and, ſenſible of the injuſtice he has done, flies directly towards the ocean; when, if the lawful owner does not diſcover the injury he has ſuffered before the thief is out of ſight, he eſcapes with impunity, and ſoon returns with his burden, as if he had made a foreign purchaſe.

IT has been ſaid, that one of the body acts the part of a centinel, while the other ſolan geeſe, with their heads under their wings, continue aſleep, and gives the alarm if an enemy ſhould approach, and that a general maſſacre might be eaſily made, if this centinel was ſurpriſed and diſpatched. But the preſent St. Kildians deny, that the ſafety of the whole flock depends ſo entirely on the vigilance of the watch. The ſolan geeſe repair to St. Kilda in the month of March, and continue there till after the beginning of November. Before the middle of that month, they,

they, and all the other sea-fowl, fond of this coast, retire much about the same time, into some other favourite regions; so that not a single fowl, belonging to this element, is to be seen about St. Kilda, from the beginning of winter, to the middle of February.

In these islands is another sea-fowl, highly esteemed, called the Tulmer. This bird is nearly of the same size as a barn-door fowl; but his legs and wings are much larger. Over the back, wings, and tail, his feathers are of a light grey; but round the breast and neck more inclined to white. His head is round, his neck thick and short, and his bill, which is about an inch and an half in length, bends inwards, and is pointed like that of an eagle. He is a most ravenous fowl, and feeds only on sorrel and the fat of fish; pieces of whale and sea blubber are frequently found in his nest. The people of St. Kilda bestow the highest encomiums on this bird. Mr. Macauley says, that he heard one of the most sensible men of St. Kilda thus extol it. Can the world exhibit a more valuable commodity? The Tulmer furnishes oil for the lamp, down for the bed, the most salubrious food, and the most efficacious ointments for healing wounds, besides a thousand other virtues of which he is possessed, which I have not time to enumerate; but to say all in one word, deprive us of the Tulmer, and St. Kilda is no more.

The Tulmer lays no more than one egg in a season, it being peculiarly sterile, among all the different tribes of birds that haunt these islands; and therefore, to plunder its nest is reckoned a high crime among the St. Kildians. It is remarkable, that the young Tulmer, when of the proper size, is no sooner attacked in his nest, than he endeavours to disconcert the enemy, by spouting

ing out a quantity of oil, at his wide noſtrils, which he ſquirts directly into the face and eyes of the fowler; and this inſtinctive ſtratagem, frequently gives him an opportunity to make his eſcape. But thoſe who are verſed in this diverſion, take all poſſible precautions to ſurpriſe him, and the more ſo, as they eſteem the oil incomparably precious, and for that reaſon exert all their ſkill and dexterity to ſave it. Yet in ſpite of their utmoſt care, the fowlers are beſmeared with it, and any part of their cloaths touched by an oil ſo ſpirituous, will burn like a candle. Every Tulmer yields near an Engliſh pint of this liquid ſubſtance, which drops out of the noſtrils of the fowl while warm, and a conſiderable quantity of it is preſerved in the iſle. Of the fowls themſelves, every family has a great number ſalted in caſks for winter proviſions.

ANOTHER extraordinary ſpecies of birds which reſort to theſe weſtern iſlands, is the Lavie, which in ſize reſembles a duck, though it is rather longer, and hardly ſo thick: he is black above, the whole breaſt and belly white, with a circle of the ſame colour round the neck; the bill is black and ſharp at the point, and the egg, which is larger than that of a duck, is moſt beautifully variegated with a diverſity of colours, as black, white, red, yellow, blue, and green; and ſcarce any two of them nearly reſemble each other. This fowl builds no kind of neſt, but lays her egg on the ſhelf of a bare rock, where ſhe plants it in ſo very nice a manner, that if once touched, it will be found impoſſible to fix it in the ſame place again; and ſo ſlender is the hold their eggs have of the rock, that if the fowls are ſurpriſed, ſo as to ſtart from them in a hurry, they tumble down into the ſea, in thick ſhowers.

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THE Lavies are no ſooner diſcovered on the coaſt, than thoſe who had formerly diſtinguiſhed themſelves by ſuch feats, deſcend with the help of their ropes, into the well known ſhelves of the rocks, each having a broad piece of linen, or any thing remarkably white, fixed on his breaſt. This is done in the night-time, when the bird miſtaking an object ſo conſpicuous, for a part of the rock, endeavours to cling to it, upon which he is inſtantly caught, and diſpatched. In this ſituation the fowler continues till about the dawn, and then makes the wonted ſignal, by pulling the rope on which his life is ſuſpended: his companion, who ſtands above, takes care in the firſt place to ſecure the prey, which ſometimes conſiſts of no leſs than four hundred Lavies, and when that is done hauls up the adventurer, who is not, without reaſon, highly extolled for his proweſs, and moſt graciouſly received by all his friends.

BEFORE we leave theſe fowls, it will be proper to give a farther account of the manner of catching fowl in general, which is there an affair of the utmoſt importance. The men of St. Kilda, are upon theſe occaſions divided into fowling parties, each of which generally conſiſts of four perſons, diſtinguiſhed by their ſkill and agility. Each party has at leaſt one rope about thirty fathoms in length, made of raw cow-hide, ſalted and cut circularly into three thongs, all of equal length, cloſely twiſted together; by this means they are able to ſuſtain a great weight, and are ſo durable as to laſt about two generations; for to prevent its being injured by the ſharp edges of the rocks, the cord is covered with ſheep ſkins dreſſed in much the ſame manner. By the help of theſe ropes, they traverſe and examine rocks of a prodigious height; linked together in couples, each having an end of the

the cord faſtened round his waiſt. When one of the two deſcends, his colleague plants himſelf on a ſtrong ſhelf, and takes care to have ſuch ſure footing, that if his companion makes a falſe ſtep and falls, he may be able to ſave him. "Theſe, ſays the "Reverend Mr. Macauley, are ſtupendous adven- "tures, equal to any thing in the feats of chival- "ry. I was preſent at an operation of this kind: "my curioſity led me to ſee ſo uncommon a trial "of ſkill; but before it was half over, I was "greatly ſhocked, and moſt heartily ſick of it. "Two noted heroes were drawn out from among "all the ableſt men of the community; one of "them fixed himſelf on a craggy ſhelf; his com- "panion went down ſixty fathoms below him, and "after having darted himſelf away from the face "of a moſt alarming precipice, hanging over the "ocean, he began to play his gambols: he ſung "merrily, and laughed very heartily. The crew "were inexpreſſibly happy, but for my part, I "was all the while in ſuch diſtreſs of mind, that "I could not for my life run over half the ſcene "with my eyes. The fowler, after having per- "formed ſeveral antick tricks, and given us all "the entertainment his art could afford, returned "in triumph, and full of his own merit, with a "large ſtring of fowls round his neck, and a num- "ber of eggs in his boſom."

INDEED, the greateſt curioſity of St. Kilda, are the inhabitants themſelves, theſe are very few in number; for though the iſland might eaſily ſup- port three hundred perſons, and when Mr. Mar- tin viſited it about the end of the laſt century, he found one hundred and eighty perſons there, yet they have been ſo reduced by a contagious diſ- eaſe, that in 1764 they were reduced to eighty- eight. The ſmell of their houſes, cloaths, and breath,

breath, is very offenſive to a ſtranger, who is uneaſy when a St. Kildian is near him; and for two or three days breathes a thick, loathſome air; but what ſeems very unaccountable is, that the freſh air, which the ſtranger carries about him with the ſmell of his cloaths or breath, affect the natives in a very ſingular manner. The company of a ſtranger is not only offenſive to them, but on approaching him, they find a difficulty in breathing.

THE men are ſtout hardy fellows, and though generally ſpeaking ſhort of ſtature, are extremely thick and brawny, but rather clumſily made, than nicely proportioned; they are remarkably ſtrong, carry huge burdens, and will tug at the oar for many hours. In their nocturnal expeditions, they undergo great hardſhips, and make very light of fatigue and danger. The women are moſtly handſome, their complexion freſh and lively, and their features fine and regular.

THE cloathing of this people is quite coarſe and made for warmth. The linen manufactured among them is a meer trifle, and extremely coarſe. The weavers underſtand their buſineſs very ill. Every man is the taylor and ſhoemaker of his own family; all the leather of the iſland, and thoſe neareſt to it, is tanned with the tormentil root to great perfection.

THE St. Kildians ſpeak a very corrupt dialect of the Galic, adulterated with a little mixture of the Norwegian Tongue; and every man, woman, and child, has an incorrigible liſping. They are enthuſiaſtically fond of muſic, and delight much in ſinging, their voices being very tuneful. The ſubjects handled by the poets of St. Kilda, are the beauty and accompliſhments of the fair ſex, the heroic actions of their friends, their dexterity

in climbing rocks, their ſuperior ſkill in fiſhing, their extraordinary vigour at the oar, and the common topicks of perſonal advantages and intellectual merit.

WITH reſpect to the moral duties, they excel all the civilized nations; for in regard to the virtue of hoſpitality, they are ſo unfaſhionable, as to poſſeſs it in an eminent degree, and are remarkably generous and open-hearted. In their way they are extremely complaiſant, the women never approach a ſtranger without low curteſies, and the men always addreſs him in terms of the moſt profound reſpect. They marry early, an honeſt deſire of preventing or removing the inconveniencies of a ſingle life, or pure diſintereſted love, are the ruling paſſions in the advances they make to matrimony. Should a young fellow be poſſeſſed of a ſpade, rake, creel, and fowling rope, he marries without any fear or ſolicitude, will maintain himſelf, his wife and children, live contentedly on a ſmall plot of ground, and pay his rents punctually to the proprietor of the iſland, with barley and feathers. Drunkenneſs is not yet introduced here, but they have a moſt violent paſſion for tobacco, of which they buy an annual ſtore of the ſteward, who viſits them once a year. For this univerſally bewitching article, and ſome other goods indiſpenſibly neceſſary, as ſalt, iron, and timber, they barter away their cows, ſheep, grain and feathers. Theſe commodities conſtitute all their riches: they have frequently heard of gold without thirſting for it; and, I believe, ſays our reverend author, they have not touched coin of any kind before this age. Here high portioned wives never rule their huſhands, here a cruel ſtep-mother never perſecutes her guiltleſs ſtep-ſon for the ſake of pelf: here the nuptial tie

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is always held ſacred. The people have ſcarce any wants, and conſequently ſcarce any deſires of a pecuniary kind. They are devout, attend divine worſhip very regularly, and ſtrictly obſerve the Lord's day. Their morals are, and muſt be purer than thoſe of great and opulent ſocieties; but ſome of them are rather free from vices, than poſſeſſed of virtues: diſſimulation and a trick of lying are their predominant faults, in order to leſſen the heavy taxes they are obliged to pay; but ſlavery is the never-failing ſource of inſincerity. If at a diſtance from the ſeats of juſtice, they are abſolute ſtrangers to the laws delay: if ignorant and unphiloſophical, they are libertines neither in belief or practice; nor with learned ſpeculation ſtrike at the foundation of virtue, nor produce any breach of the public tranquility or happineſs. The exceſſes of intemperance, the mad quarrels and extravagant frolicks of drunkenneſs, the ſhameful uſe of places dedicated to the ſervice of lewdneſs and folly, of diſgrace and miſery, they never yet knew or felt; and in ſhort, if happineſs is any where to be found it is among them.

But to return from this long digreſſion. In ſome of the Iſles of Orkney are found the Claik-Geeſe or Barnacles, which are covered with a ſhell, and ſtick to trees by the bill, from whence they are ſaid to derive their nouriſhment. Mr. Martin ſays he ſaw many of them, but never perceived any upon the tree with life in them; though the natives informed him they had obſerved them move with the heat of the ſun. Sir Robert Moray ſays, they hang at the tree by a neck longer than the ſhell, of a kind of filmy ſubſtance, ſomewhat reſembling the wind-pipe of a chicken. In every ſhell he opened he found a perfect ſea-

fowl, with a little bill like that of a goose, feet like those of water-fowl, and the feathers all plainly formed; but he never saw any of them alive. Thus strange stories have been told, and too readily believed, concerning the barnacles; as that they grow upon trees by the sea-side in shells, out of which the birds, when come to a proper degree of maturity, make their passage and drop into the water. Others have supposed them to be produced from rotten wood that has floated long in the sea, or from certain fruits falling into the water, contrary to the new philosophy, which explodes equivocal generation *. Others again have ascribed their origin to a kind of sea-shells, adhering to old planks and bottoms of ships, which from thence are called Conchæ Anatiferæ; but these shells in reality contain an animal of their own species, as well as the oyster, muscle, or other shell-fish. The truth seems to be, that the barnacle is not a marine animal or fish, (as some have imagined) but a real goose, and oviparous, like other fowls.

JUST before the south promontory of the Isle of Man lies a little island called the Calf of Man, resorted to at one time of the year by a vast number of Puffins, a sort of sea-fowl, that breed there in the holes of the rabbits, which abandon them

* By this is meant a method of producing animals, not by the usual way of coition between male and female, but by a certain power or virtue in the sun, &c. Thus Maggots, flies, spiders, frogs, &c. have been supposed to be produced by the sun's warming, agitating, and impregnating the dust, earth, mud, and putrified parts of animals. This equivocal method of generation, which is also called spontaneous, was commonly believed by the ancient philosophers; but the moderns, from more and better observations, unanimously reject it, and maintain that all animals, and vegetables too, are univocally produced, that is by parent animals, and vegetables of the same species and denomination.

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to these visitors for that season. When the young ones are ready to fly, which is about the middle of August, the natives hunt them, as they call it, and take annually about four or five thousand. The old ones fly out to sea all day, where having got their prey, and digested it in their own stomachs, they disgorge it into those of their young; for when the young ones are opened, nothing is found in them but a digested oil, or leaves of sorrel, so that they are almost one lump of fat. The greatest part of them are consumed by the inhabitants, but some are pickled in an elegant manner, and sent abroad as presents.

As we are now speaking of wild fowl, it seems not improper to take notice of the vast numbers of the aquatic kind, particularly the duck, mallard, teal, and widgeon, which are taken in the fens of Lincolnshire, and the neighbouring counties. The manner of taking them in decoys (as they are called) into which they are enticed by ducks bred up tame for that purpose, is curious enough, and very profitable to the inhabitants. The decoy-ducks, being brought up in the decoy-ponds, and fed constantly at certain places, become at length so familiar with their feeder, as to take their meat out of his hand; and as they are not confined, they fly abroad and return again at pleasure. At the proper season of the year these subtile creatures take frequent flights, and sometimes, after being absent several weeks, return home with a very numerous company, invited (as is supposed) from Holland or other parts of the continent, to partake of their entertainment. As soon as the decoy-men perceive they are settled in the pond, and that their numbers are increasing, they go secretly to the side of the pond, under the cover of hedges

made with reeds, and then throw over handfuls of corn into such shallow places as the decoy-ducks are acquainted with, to which they resort and entice the strangers. Thus they are entertained without any disturbance for several days, the bait being sometimes thrown in one place, sometimes in another, till at length they are led insensibly into a narrower part of the pond, where the trees on each side hang over-head like an arbour, though at a good height from the water. Here the boughs are so artfully managed, that a large net is spread near the tops of the trees, and fastened to hoops which reach from side to side; but the passage is still so wide and so lofty, that the fowls do not perceive the net above them. The decoy-man, keeping unseen behind the reeds, goes forward, throwing corn into the water, which the decoy-ducks greedily fall upon, and encourage their foreign guests to follow them, till by degrees they are all got under the arch or sweep of the net, which imperceptibly grows lower and narrower, till it ends in a point like a purse, perhaps two or three hundred yards from the first entrance. When the decoy-man sees they are all sufficiently within the net, on a sudden a dog, which till then keeps close by him, and which is perfectly taught his business, rushes from behind the reeds into the water, swimming directly after the ducks, and barking as he swims. Immediately the frighted ducks take wing, but being beat down again by the net, they necessarily swim forward to avoid the dog, till at last they are hurried into the purse, where they fall a prey to the decoy-man, who there waits to receive them.—By this means incredible numbers of wild fowl are taken every week during the season, most of which are sent up to London;

London; insomuch that some of the decoys are rented at four or five hundred pounds *per annum*.

We might easily enlarge upon this subject, and give an account of remarkable quadrupeds, fishes, insects, &c. which are the production of Britain and the British seas; but this would require a volume of itself, and be running beyond our design, which is only to describe a few of the greatest, not all the curiosities of every country; and therefore we proceed to take a view of some of the remains of antiquity with which our island abounds.

ANTIQUITIES.

One of the greatest wonders of this kind is Stonehenge, a famous pile or monument of huge stones on Salisbury Plain, about six miles distant from that city. Antiquaries are very much divided in their opinions concerning the origin and use of this surprising fabric. Many of them take the stones to be artificial, and to have been made on the spot, thinking them too unwieldy for land-carriage; but Inigo Jones is positive they are all natural, and whoever examines the grain of them exactly will be of his opinion. This celebrated architect, in a treatise published in 1658, strives hard to persuade us that it was a Roman temple. Others, reading the name Stone-Hengist, maintain it to have been a monument erected in memory of Hengist, the first general of the Saxons in England. Some will have it to have been the burial-place of Ambrosius, King of the Britons; and others, that it was raised by that prince in memory of the Britons, who were there slaughtered by the Saxons. But no author has handled this matter so fully and clearly as

Dr. Stukely, who seems to have made it more than probable that it was a temple of the British Druids*, and the chief of all their temples in this island. We shall therefore borrow a short account of it from the doctor's learned dissertation on this subject.

STONEHENGE is situated on a rising ground, and makes a grand and awful appearance, especially as we approach it on the north-east, which side remains most perfect. It is encompassed by a circular ditch or trench, which having passed, we ascend thirty-five yards before we come at the work itself. The whole consists of four circles of stones, or rather two circles and two ovals, the outermost being about a hundred and eight feet in diameter. Of the outer circle, which origi-

* The Druids were the priests or ministers of religion among the ancient Britons, Gauls, and Germans; and being chosen out of the best families, the honours of their birth, together with those of their function, procured them the highest veneration. Nor had they only the administration of sacred things, but were the judges and arbiters of all affairs indifferently, both publick and private; and such as disobeyed their decisions were excommunicated, which was their principal punishment. Every nation had an Arch-Druid, or high-priest, who acted with absolute authority over all the rest. We know but little as to their peculiar doctrines, only that they believed the immortality of the soul. They studied astrology, geometry, natural philosophy, and morality; and being in the greatest esteem, the British and Gaulish youth flocked to them for instruction. The children of the nobility (according to Mela) retired with them into caves and forests, where they sometimes lived twenty years under their tuition. They preserved the memory of the actions of great men in their verses, which they never allowed to be wrote down, but made their pupils learn them by heart. They had the Mistletoe in singular veneration, gathering it every year with abundance of ceremony. History informs us, that upon some extraordinary occasions they offered human sacrifices; but the custom was condemned by Augustus, and entirely abolished by the succeeding emperors.

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nally consisted of sixty stones, that is, thirty uprights and thirty imposts, there are seventeen uprights left standing, six of which have imposts upon them, and two more are still to be seen lying upon the ground, and also six more uprights. These stones are of a vast bulk, the uprights being nine cubits high, exclusive of the imposts; and the cubit is about twenty inches English measure.—The inner circle, which is about eight feet distant from the first, consisted of forty lesser stones, which never had any imposts. They are flat parallelograms, like those of the outer circle; and nineteen of them are yet standing. They are a cubit thick, and two and a half high, being just half as big as the uprights of the outer circle. The walk between these two circles, which is a hundred yards in circumference, must have been very noble and delightful when this wonderful structure was entire.

WITHIN these circles are the two ovals, which are the principal part of the work, here being the Adytum, or cell, into which we may suppose none but the upper order of druids were to enter. This is composed of what the doctor calls Trilithons, each of which consists of two upright stones, supporting another laid across their heads and joined by mortises. Of these there are five remaining, three of which are entire, and two ruined in some measure, but the stones are still upon the spot. From the entrance into the adytum, these trilithons are placed two and two on each side, and one at the upper end, which was the highest, as the two first on the right and left were the lowest; but all the stones are of a surprizing magnitude. The first trilithon on the right has suffered much, its impost and one of the uprights being tumbled town, and each broken

into three pieces. The oppoſite trilithon on the left hand is ſtanding, but very much decayed; the next to it is entire, as is likewiſe that facing it on the right, except that one end of the impoſt is fallen off, and its upper part much impaired by the weather. The trilithon at the upper end, which ſtood beyond the altar, was the fineſt part of the whole work, the uprights having been (according to the doctor) above ten yards long, well chiſſelled, and juſtly proportioned in their dimenſions. One of them ſtands entire, but leans againſt one of the ſtones of the inner oval; the other is broken in two, and lies upon the altar, as does the huge impoſt it once ſupported. This broken ſtone (the doctor tells us) weighs above forty tons, and would require a hundred and forty oxen to draw it, and yet is not the heavieſt ſtone neither. It is therefore amazing, not only how ſuch maſſy loads were brought hither (as they muſt have been) from the diſtance of fifteen or ſixteen miles, but to ſee ſo many of them placed together in a nice and critical figure, artfully joined by tenons and mortiſes, and a geometrical proportion obſerved through the whole ſtructure. How could they manage ſuch prodigious ſtones as theſe, which they have fixed as it were in ſockets dug in the chalk, and rammed in like poſts, without more irregularity in their height and diſtance?*

* Though the ſize of many of theſe ſtones is enormous enough, yet they are trifles compared to ſome that we read of. Thoſe (for inſtance) that were uſed in building the battlement or additional wall to ſupport the precipice of Mount Moriah, on which the temple was erected, were much larger than any of Stonehenge, each ſtone being forty cubits in length, fourteen in breadth, and eight in thickneſs. Perhaps the ancients had ſome method of moving heavier weights than we now find practicable.

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A Prospect of Stone Henge *from the West.*

A Prospect of Stone Henge *from the South.*

THE inner oval consists of lesser stones, which rose gradually in height from the entrance to the upper end of the Adytum. There are only six of these remaining upright, with the stumps of three or four more, and several lying on the ground.—As for the stone which our author takes to have been the altar, it is of a different kind from the rest, resembling the blue coarse marble that is brought from Derbyshire, and frequently used for tomb-stones. It is twenty inches thick, and about twice as abroad; but its length is not easily ascertained, it being broken into several pieces, and almost sunk into the ground by the weight of the ruins fallen upon it, particularly the impost, and one of the uprights of the great trilithon above-mentioned.—The heads of oxen, deer, and other beasts, (the undoubted reliques of sacrifices) which have been found upon digging in and about this place, are a confirmation that Stonehenge was originally a pagan temple *.

* Dr. Stukely supposes, that Stonehenge was built not long after Cambyses invaded Egypt, and by his outrages forced the priests and inhabitants in general to disperse themselves into all parts of the world. Some of these, he imagines, came into Britain, and introduced part of their learning, arts, and religion among the Druids, and perhaps had a hand in this very fabrick, the stones being wrought with a tool, which he thinks was not the custom of the Druids, their other works being of rude stones, after the patriarchal and Jewish mode. At that time the Phœnician trade was at its height, whose vessels might convey the Egyptians to this island; which makes our author's conjecture the more probable. This was before the building of the second temple of Jerusalem—What might possibly have cleared up these uncertainties, was a tablet of tin, with an inscription upon it, found at Stonehenge in the reign of king Henry VIII. But as the characters were not then understood by those who were consulted on that occasion, the plate was destroyed, or at least thrown by and lost.

AROUND this temple are a great number of Barrows, (as they are called) or monuments of earth thrown up in form of a bell, moſt of them ſurrounded with little ditches, and ſome of them with a large circular trench of ſixty or a hundred cubits in diameter. All the riſing grounds about Stonehenge. for ſeveral miles round, are covered with theſe barrows; from whence ſome have concluded, that great battles have been fought upon the plain, and that the bodies of the ſlain were there interred: but they are in reality no other than family burying-places, and ſeveral of them the ſingle ſepulchres of kings and eminent perſons, which are ſituated near this temple, for the ſame reaſon that we bury in church-yards and conſecrated ground; for it is obſervable, that all theſe barrows, even thoſe at the greateſt diſtance, are within view of Stonehenge.

IN the year 1722, the late lord Pembroke opened a barrow, and in the centre of it, about three feet under the ſurface, found a perfect ſkeleton, the head lying north towards Stonehenge. The year following, by his lordſhip's order, Dr. Stukely opened another, and found an urn of unbaked clay, containing a heap of burnt bones, intermixed with a great many beads of various ſhapes and colours. The collar-bone and one ſide of the under-jaw remained very entire; from the ſize of which, and from the female trinkets depoſited in the urn, it appears to have been a young woman of fourteen or fifteen years of age, who had carried arms, as the Britiſh virgins uſed to do, the braſs head of her javelin being found amongſt the remains. In the next barrow to this, incloſed within the ſame trench, was found the ſkeleton of a man, but through length of time, the bones were exceedingly rotten and periſhed. In another barrow

barrow, the doctor found all the burnt bones of a man, but no ſigns of an urn; and in ſome barrows, amongſt the human bones, were thoſe of horſes, dogs, and other animals. From theſe diſcoveries our learned author thinks it evident, that the ancient Britons had the cuſtom of burning the bodies of their dead before the name of Rome was known.

SYLCHESTER, which is now only a hamlet, conſiſting of one farm-houſe and a church, is ſeated in a fine open country, in the county of Hants, and on the borders of Berkſhire, 10 miles from Reading, but was once a large and populous city, the celebrated Vindomia or Vindomium of the Romans, as appears from the veſtiges ſtill remaining. The walls are in many places almoſt entire, and in ſome near twenty feet high, having various kinds of trees, of ſuch conſiderable bulk growing out of them, that within twenty years paſt, they are ſaid to have yielded near a thouſand pounds worth of timber. Theſe walls are chiefly built with flints, though other ſorts of ſtones are frequently intermixed, and every where, at the diſtance of about two feet, there is a ſtratum or layer of broad flag-ſtones, which was probably intended to prevent the flint and other ſmall ſtones from falling ſo readily, if battered by thoſe engines called by the Romans Battering Rams. On the ſouth, ſouth-eaſt, and ſouth-weſt ſides, the walls are at leaſt fourteen feet thick; but the north ſide is leſs ſubſtantial, probably on account of its being ſtrengthened by a mote, which the ſprings would always keep full; for on that ſide the ditch ſtill remains, and is in many places filled with water. The form of the city is irregular, but ſeems to have been intended for an hexagon. There were four gates pointing to the four quarters,

ters, and juſt without the eaſt-gate, at about a hundred yards diſtance from the wall, are the remains of a Roman amphitheatre, which appears to have been ſix ſeats deep. The area is now made a horſe-pond, but the water might be eaſily let off, the veſtiges of the old drains being ſtill to be ſeen, and might be opened with little difficulty. On the ſouth-ſide of the wall there is ſtill a ſally-port, and part of a ſubterraneous paſſage.

THE contents of the land within the walls is about an hundred acres, which is nearly as much as was included within the walls of London; and on the outſide of them, there were doubtleſs conſiderable buildings; for at about the diſtance of 300 yards from the walls, there is a bank and ditch, which covers near two-thirds of the city, on thoſe parts where the ground is firm, and the city was moſt likely to be attacked. Beſides theſe veſtiges, at about the diſtance of a mile and a half from the walls to the north-weſt, is a village called the Soak; near it are the remains of a camp, which, by the form, appears not to be Roman; and about half a mile from the Soak, is a bank and ditch, which extend ſeveral miles; but as they do not ſeem to environ the city, they were probably no part of the works of ſecurity, but are of a more modern date.

THIS city was well ſituated for health, but not for the conveniencies of life; for there is no river within many miles of it, and only a little rivulet, which riſes in Kingſlere hills, and running within a mile of the walls, diſcharges itſelf into the river Kennett, at Reading. There is indeed one ſpring within the walls, near the eaſt-ſide, which, from the pieces of leaden pipes that have been dug up, ſeems to have ſupplied good part of the city with water. Indeed there are many ſprings without the

the walls, and perhaps there might be wells enough within, to afford water ſufficient to enable the inhabitants to ſuſtain a ſiege.

THE ſtreets of the city were regular, and interſected each other at equal diſtances; the one part running from eaſt to weſt, and the other extending from north to ſouth, as may be evidently ſeen by the corn growing in the fields, eſpecially if viewed before harveſt; where you may trace not only the ſtreets, but the foundations of many houſes, ſome of which ſeem to have been very large, the contents of many of the rooms being thirty-three feet by twenty-eight. The city appears to have been burnt, from the great quantity of aſhes and charcoal that is now dug up, without any timber; and many pieces of the coin, which are dug up, are ſo burnt, as to be deprived of the phlogiſton-principle, and capable of being reduced to powder.

IN or near the middle of the city, are ſome remains of a temple, which appears to have been dedicated to Hercules, from an inſcription on a piece of grey marble dug out of the foundation by Mr. Stair of Aldermaſton in Bucks.

CAMDEN informs us, that this city was rebuilt by Conſtantius, but has not been able to tell us by whom it was firſt erected. It was, however, probably built by the ancient Britons, for they very early learned the method of building forts from the Phœnicians; and Mr. Stair, in digging under the old buildings, and taking up the Roman pavements, with their foundations, diſcovered other foundations of an older date, and of a different workmanſhip, compoſed of rough flint ſtones, and a gravelly mortar. What confirms this conjecture of theſe being the works of the ancient Britons, is, that Britiſh coins have been found

found there, among which is one of gold, and another of ſilver, very perfect, and extremely well preſerved, now in the poſſeſſion of Mr. Stair.

THE materials dug up from the ruins are Roman pavements, Roman tiles, pieces of coarſe marble, pieces of round free-ſtone pillars, ſquare free-ſtones fluted at the edges, ſome of them very large; pieces of ſtatues, but none entire; pieces of copper veſſels ornamented; the bones of various animals, and what is very extraordinary, without the walls, to the eaſtward, a human ſkeleton was dug up, that was full nine feet long.

THE coins, which have been found here in great abundance, are of gold, ſilver, copper, and Corinthian braſs; ſome are only caſed with ſilver, and others only gilt. Among theſe coins, as we have already obſerved, are ſome that are ancient Britiſh, and the reſt are Roman. Some of the latter are conſular, and the reſt are of moſt of the emperors and empreſſes, from Auguſtus down to Maximus, in or near whoſe reign the city was probably deſtroyed; for though a great number of coins are found of almoſt all the emperors and empreſſes, (except Otho) yet not one has been found of any Roman monarch ſince Maximus, nor any Saxon or Daniſh coins at all, which there probably would have been, had the city ſubſiſted after his time. It muſt be obſerved, that Mr. Stair has in his poſſeſſion above two thouſand coins in gold, ſilver, copper, and braſs, which have been dug up here, on moſt of which the inſcriptions are entire, though the reverſes are moſtly different. Two onyx-ſtones, on one of which was depicted a cock picking out of a Cornucopia, or Horn of Plenty; and the other had theſe four letters ZACP. They were each of the ſize of common ſeals, and both of an oval form.

AMONG

AMONG the antiquities of England, and perhaps of any other country in the world, none deſerve a particular deſcription more than the once ancient and beautiful city of Old Sarum, which ſtands at the diſtance of one mile north of the city of Saliſbury, and was formerly the ſee of a biſhop, who had a cathedral here. This city was perfectly round, and, when in its proſperity, together with its lofty caſtle, riſing from the centre of the city, muſt doubtleſs have afforded a very grand and formidable appearance, the whole being built on a large hill, that commands a beautiful and extenſive proſpect, which, with immenſe labour, was reduced to an uniform circular figure. The city was near two thouſand feet in diameter, encompaſſed by a ditch of great depth, and two ramparts, the inner and the outer. On the inner, which is much higher than the outer, ſtood a wall, near twelve feet broad at its baſe, formed of flint and chalk, ſtrongly cemented together, and caſed with hewn ſtone-work, on which was a parapet with battlements quite round. Of this wall there are ſtill large remains to be ſeen on the north-weſt ſide.

AT a conſiderable diſtance on the ſummit of the hill, which was in the centre of the whole circumference, ſtood the caſtle or citadel, ſurrounded with a deep intrenchment, and a high rampart. In the area under the caſtle is a wide ſpace between the before-mentioned inner and outer ramparts, in which ſtood the city, which was divided into equal parts, north and ſouth; and near the middle of each diviſion were the gates, which formed the two grand entrances, and were directly oppoſite to each other. Each of theſe gates had a tower over it, and before it was a mole of great ſtrength. Beſides theſe, there were ten other towers,

towers, which extended, at equal distances, quite round the city; and opposite to them, in a straight line with the castle, were built the principal streets of the city, intersected in the middle by one grand circular street, that went quite round.

THE area on which the city stood, thus surrounded with walls, ramparts, towers, and a deep intrenchment, was also, for its greater security, divided into nearly equal parts by other intrenchments and ramparts, by which means, if one part was taken, the other was still defensible; and if the whole of the outworks were in the hands of an enemy, the besieged might retire into the castle, whose walls, from the large fragments and foundations that are left, appear to have been impregnable. There seems to have been but one grand entrance into the castle, which was on the east, through a narrow gate of immense strength, from whence a double winding stair-case led to the top. There appears to have been five wells, all of them long since filled up, four in the city, and one in the castle, chiefly designed to supply the garrison and the inhabitants in time of war, or in case of a siege, the river being about half a mile distant.

WHETHER Julius Cæsar pushed his conquests thus far, is controverted; but that it was frequented by the Romans, is most certain, from the coins of Constans, Magnentius, Constantine and Crispus, often found there. Kenrick the Saxon, after he had conquered the Britons in the year 553, was the first that got possession of this place. He often resided here, and it was possessed by the West-Saxon kings, his descendants, till Egbert brought the whole heptarchy under his power. King Edgar, who was descended from him, called a great council or parliament here in 960. But in the year 1003, it was taken by king Swain,

who

who having pillaged and burnt part of it, returned with his army to his ſhips, loaded with wealth.

ABOUT three miles from Woodſtock in Oxfordſhire, is a monument of antiquity, called Rollrich-Stones, ſomething of the nature of Stonehenge, it being a circle of ſtones of an irregular figure, but not above five feet high, ſome few excepted. Mr. Toland takes them to be the remains of an old Britiſh temple; others ſuppoſe they were raiſed in memory of a victory obtained by Rollo the Dane, or on occaſion of his being proclaimed king of England by his army. That they were erected on account of the coronation of ſome of the Daniſh kings, ſeems indeed to be the moſt probable conjecture *

AMONGST the antiquities of this kind we may reckon the Hurlers, a number of large ſtones in three circles, on a Down not far from Bodmin in Cornwall. They are oblong, rough, and unhewn; and take their name from a ſuperſtitious opinion of the vulgar, that they were men tranſformed into ſtones for profaning the ſabbath, by Hurling the ball, an exerciſe for which the people of that county are particularly famous. Some take them for trophies erected in memory of a battle; others for boundaries to diſtinguiſh lands; and others, with more probability, for ſepulchral monuments: but Dr. Stukely will have it to have

* At a little diſtance from this circle of ſtones there is one larger than the reſt, which the country-people call the King, from a fabulous tradition amongſt them not worth mentioning; but (as the author of the Addenda to Mr. Camden obſerves) this may poſſibly be the Kongſtolen belonging to the circles of ſtones, uſually raiſed for the coronation of the northern kings, as Wormius informs us; eſpecially ſince we learn from the ſame author, that this Kongſtolen, though commonly placed in the middle, was yet ſometimes at a diſtance from the circle.

been

been a temple of the Druids, as well as Stonehenge on Salisbury Plain.

THESE circles of stones are frequent in Wales, where we likewise find many other monuments of a different kind, which may be reckoned among those unaccountable antiquities that are beyond the reach of history. As a specimen of the rest, we shall mention that called Arthur's Stone, upon Kevn-bryn, a mountain in Glamorganshire. This is a vast unwrought stone, weighing about twenty tons, supported by six or seven others not more than four feet high, set round in a circle. They are all of the mill-stone kind, which is the natural stone of the mountain; and it is said, that several tons have been broken off the great one for that use. The carriage and fixing this huge stone upon its supporters, is plainly the effect of human art and labour, which must have been more than we can easily conceive. There are several other monuments of this sort in Wales, which are generally supposed to have been places of burial.

IN Hoy, one of the Orkney islands, there is a very remarkable stone called the Dwarf-Stone, thirty-six feet long, eighteen broad, and nine thick. It is all hollowed within, having an entrance on one side about two feet square, with a stone of the same dimensions lying near it, which undoubtedly was intended for a door. Within, at the south end of it, there is the form of a bed and pillow, big enough for two persons, neatly cut out of the stone. At the north end there is another bed or couch, and in the middle is a fire-place, with a hole above it for a chimney. The marks of the workman's tool are very evident about it; and it is generally supposed to have been a hermitage.

AMONGST

AMONGST the antiquities of Britain we ought to mention the famous Picts Wall, which croſſed the whole iſland from Newcaſtle upon Tyne to the Iriſh ſea, above eighty miles in extent. It was built by the Romans, to prevent the Picts and Scots from making their inroads, as they frequently did, into the ſouthern parts of the iſland. The emperor Adrian firſt threw up a wall of earth, ſtrengthened with large ſtakes drove into the ground, and wreathed together with wattles. This was repaired in the year 123 by the emperor Severus, who added to it ſeveral ſtone-turrets, near enough to give an alarm from one to another by the ſound of a trumpet. Having been ſeveral times deſtroyed by the Picts, and repaired by the Romans, at laſt Ætius, a Roman general, rebuilt it of ſtone in the year 430; but it was ſoon after ruined by the Picts, and no longer regarded but as a boundary * between the two nations. This wall was eight feet thick and twelve feet high, and the remains of it are ſtill to be ſeen in ſeveral parts of Cumberland and Northumberland. The higheſt piece of it that is now left ſtanding between Carliſle and Newcaſtle, is about Thirlewall, where it is near three yards high; but the far greater part of it has been carried off to build houſes, or to make fences about the neighbouring grounds; and in ſome places whole towns ſtand at this time upon the very foundation.

IRELAND is not ſo full of antiquities as Great-Britain, though not deſtitute of ſuch curioſities. About a mile from Caſtle-Conner, in the county

* Towards the end of the laſt century was found in the rubbiſh of this wall a winged image of braſs, about ſix inches long, agreeing well enough with the deſcription which ſome of the ancients have given us of the god Terminus, whom they uſed to lay in the foundations of their boundaries.

of

of Roſcommon, there is a round hill, into which an entrance was diſcovered in 1640, and ſeveral ſquare chambers found within it, built with large ſtones, and communicating with each other by circular paſſages.—In the hill, or rather rock of Corren, many ſtrange receſſes have been formed; and before theſe caves there is a path cut out of the rock, about a hundred paces in length. This work, which the country people call the Giant's Houſe, is ſuppoſed to be either Iriſh or Daniſh.—An ancient marble ſepulchre was dug up at Dublin in 1646, containing coals, aſhes, and human bones, which is reckoned to have belonged to the Danes before their converſion to chriſtianity.—Urns, altars, trumpets, &c. have been diſcovered in the county of Tyrone, in the province of Ulſter, of which an account is given in the Philoſophical Tranſactions.

IF the reader would be more fully informed of the curious remains of antiquity to be ſeen in theſe kingdoms, we refer him to Camden, and other authors who have profeſſedly wrote on that ſubject, and proceed to give a brief deſcription of ſome of our moſt remarkable buildings, ancient and modern.

BUILDINGS.

OF all the churches in England, or even in Europe, (if we except St. Peter's at Rome) the moſt famous is St. Paul's cathedral in London; one of the moſt magnificent and beautiful ſtructures that any modern age has produced, though the effect it ought to have is much cramped by the great crowd of buildings with which it is too cloſely ſurrounded. Some indeed have cenſured it for its heavineſs; but theſe critics have neither made allowance for its diſadvantageous ſituation,

ſituation, nor conſidered ſeparately the beauty and proportion of every part, in order to enter into the nature and deſign of the whole compoſition. Let this be done by any one who underſtands the rules of architecture, and we may venture to affirm, that St. Paul's will be found no more liable to the objection of being a heavy pile, than St. Peter's itſelf.

It is built of fine Portland ſtone, after the model of St. Peter's at Rome, having two ranges of pilaſters on the outſide, one above another, beſides twenty columns at the eaſt, and four at the weſt-end, and thoſe of the porticoes. There is a very handſome aſcent to the weſt portico, which is ſupported by twelve columns, and eight above them ſupport a pediment, in which is a noble baſs-relief, repreſenting the hiſtory of St. Paul's Converſion. The aſcent to the north portico is by twelve ſteps of black marble, the dome whereof is raiſed upon ſix columns, over which are the queen's arms ſupported by two angels, and under their feet a lion and an unicorn. To the ſouth portico we aſcend by twenty-five ſteps, and over the door-caſe is a phœnix in flames, with the word Reſurgam underneath it. The iron baluſtrade which runs round the church is very beautiful, the expence of which amounted to above eleven thouſand pounds, there being near three hundred tons of iron in it, which coſt ſixpence a pound. The pillars which ſupport the roof and cupola, or dome, are very large, and all adorned with pilaſters of the Corinthian and Compoſite orders. Round the inſide of the cupola, where the Converſion of St. Paul is finely painted by the late Sir James Thornhill, runs a handſome gallery, which has iron rails. Here a whiſper, or even the ticking of a watch, may be heard diſtinctly, at the diſtance

diſtance of more than a hundred feet. Above the dome, on the outſide, there is a neat gilded balcony, and above that a ſtone lanthorn near ſeventy feet high, with a ball and gilt croſs at the top. The floor of the choir is paved with marble, and the altar-piece has four beautiful pilaſters, painted and veined with gold, in imitation of Lapis Lazuli.

AT the weſt end of the cathedral is a curious marble ſtatue of the late queen Anne, holding a ſceptre in one hand, and a globe in the other, ſurrounded with four beautiful emblematical figures, repreſenting Great Britain, France, Ireland, and America.

THE whole expence of this magnificent fabrick, from laying the foundation of it to the preſent time, is computed at above a million ſterling. Its length from eaſt to weſt, including the portico, is 500 feet; its breadth, including the north and ſouth porticoes, 311; and its heighth, from the ground to the top of the croſs, 344. The heighth of the turrets at the weſt end is 208 feet, and of the body of the church, 120. Upon the whole, we may conclude, that if Sir Chriſtopher Wren's plan had been followed, according to which this cathedral was to have had an area ſuitable to its bigneſs, all the principal ſtreets to have been laid in direct lines upon rebuilding the city after the fire, the houſes built uniform, and placed on piazzas, the pariſh-churches diſpoſed in proper points of view, &c. if this had been done, St. Paul's would not only have appeared to much greater advantage, but the ſymmetry ariſing from ſo many beautiful viſtos would perhaps have ſurpaſſed any thing that has yet been ſeen in the world.

LET us now take a view of that ancient and venerable pile, the abby-church of St. Peter, Weſt-

Weſtminſter, which was fifty years in building, and which has been the burial-place of moſt of the Britiſh monarchs. The form of the church is a long croſs, and the choir, which has an aſcent of ſeveral ſteps to a beautiful altar-piece, is paved with black and white marble. The whole length of the Abbey is about 490 feet, the breadth of the weſt end 66, that of the croſs-iſle 189; and the height of the middle roof is 92. The pillars are of Suſſex marble, and are fifty in number, beſides near the ſame number of pilaſters. There are 94 windows, of which thoſe at the four ends of the church are very ſpacious; which, with the roofs, doors, arches, &c. are all of the ancient Gothic order. The outſide was adorned with many ſtatues of kings, moſt which are now decayed. Some figures of the apoſtles in Gothic niches ſtill remain, and a vaſt number of ſmall figures in relievo.

Of the chapels, which contain the funeral monuments of our kings and nobility, that built by Henry VII. is particularly beautiful, at the eaſt end of which is a large window with fine painted glaſs, and at the weſt end three ſpacious portals of ſolid braſs, which open into the room where the lower houſe of Convocation formerly ſat. The roof, which is all of ſtone, is divided into ſixteen circles of moſt curious workmanſhip, and ſupported by pillars and arches of the Gothic order, enriched with figures of fruit and other ornaments. Here are likewiſe a great many ſtatues in niches, which look like kings, queens, &c. having angels under them ſupporting imperial crowns; but they are commonly taken for ſaints or martyrs. In this chapel is the tomb of the royal founder and his queen, whoſe figures lie on it at full length, in ſolid braſs richly gilt; and at each corner is an

angel in the same metal. On the sides of the pedistal are two Cupids supporting the king's arms, and an imperial crown, an angel treading on a dragon, and various other figures. The screen or fence round this tomb is also of solid brass, adorned with pillars and arches, and enriched with roses and other ornaments, all of excellent workmanship.—But a more particular account of this and all the other stately tombs and monuments that adorn this Abbey, would much exceed the room we can allow them here; we shall therefore only add, that of the modern ones among the finest are reckoned those of the late duke and his mother the dutchess of Buckinghamshire, in the chapel we have been describing; and in the Abbey those of the duke of Argyle, Sir Isaac Newton, Sir Godfrey Kneller, Lord Stanhope, Capt. Cornwall, Sir Peter Warren, Sir Charles Wager, General Guest, the duke of Argyle, General Wade, Shakespear, and Prior. Besides these there are a great number, that are curious pieces of sculpture, performed by the best statuaries.—Perhaps some persons may think it just worth mentioning, that in Edward the Confessor's chapel are kept the two chairs, in which our kings and queens have been crowned ever since the time of Edward I. who brought hither, among other spoils taken from the Scots, the famous marble-stone placed under one of the chairs, on which the kings of Scotland had been crowned for many ages.

WE now proceed to the famous Minster or Catherdral of York, which is dedicated to St. Peter, built in the Gothic taste, and by some esteemed the finest in England, if not superior to any thing of the kind in Italy; for here the rules of proportion have been observed much more, that what is usually found in other Gothic structures.

tures. The weſt front is adorned with two regular towers, bound together and ſupported by the largeſt Gothic arch in Europe, under which is the principal entrance into the church. Over this arch is a magnificent window, as there is another at the eaſt end, which can never be ſufficiently admired, being upwards of thirty feet in breadth, and ſeventy-five in height, and beautifully painted with the hiſtory of the Bible in a hundred and ſeventeen partitions. The moſt remarkable deficiency is in the lanthorn ſteeple, which terminates but indifferently, though it is finely ornamented, and has eight ſtately windows, meaſuring forty-five feet from top to bottom. The ſtone ſcreens at the ends of the choir are beautifully wrought, one of which ſeparates it from the middle of the church, and the other terminates it behind the altar, to which there is a graceful aſcent of ſixteen ſteps. The carved wood-work of the choir is very ancient, and adorned with a great many knotted pinacles. The ſouth end of the cathedral is beautified with a circular window, called the marigold window, the glaſs being ſtained of that colour; and at the north end are five lights reaching almoſt from top to bottom, ſaid to have been erected at the charge of five maiden ſiſters, which may be conſidered as one ſtately window, the painting on which repreſents a rich embroidery of Moſaic needle-work.—The chapter-houſe*

* Pope Pius the ſecond is ſaid to have very much admired the cathedral here deſcribed, extolling it for its wonderful magnificence and workmanſhip, and for a lightſome chapel, with glazed walls united by ſlender pillars. This chapel is the chapter-houſe, which is confeſſedly one of the neateſt ſtructures in England, having the following line written on it in letters of gold,

Ut roſa flos florum, ſic eſt domus iſta domorum.

The jingle would be loſt in Engliſh: but it implies, that this building excels others, as much as the roſe does other flowers.

is an octogon Gothic building, sixty-three feet in diameter, with windows of painted glass, and finished with an arch or concave about 68 feet in height. The roof, which has been finely painted and carved, but is now much sullied, has not a pillar to support it, but depends entirely upon one pin, placed geometrically in the centre. It has thirty-two stalls round it, all of fine marble.—In the vestry-room are preserved several antiquities, particularly the famous horn, so called from its shape, but made of ivory, by which one Ulphus, a Saxon governor, disinherited his two sons, and bestowed his whole estate on this cathedral *.—We have only to give the dimensions of this magnificent structure, which are as follow. Its length from east to west is 524 feet; from north to south 280. The height of the body of the Minster is about 100 feet, and the top of the lanthorn without is 234 feet from the ground.—And we may add, that in the south tower there is a deep peal of twelve bells, the tenor of which weighs fifty-nine hundred weight.

HAVING done with Westminster and York, we ought not to defer any longer our description of the beautiful cathedral at Salisbury, which, of a Gothic structure, is certainly the most elegant in the kingdom. It was begun in the year 1219, and finished in 1258, when it was consecrated in the presence of King Henry III, and a great

* Camden relates, from an old author, that "Ulphus finding some difference like to happen between his eldest and "youngest son about the lordships after his death, took this "method to make them equal. He set out for York, taking "along with him the horn he used to drink out of, filled it "with wine, and kneeling before the altar, bestowed upon "God and St. Peter all his lands and tenements."—This horn, after being kept in the Minster till the 16th century, was missing for a long time, but was recovered by Henry Lord Fairfax, and there remains at present.

number

number of the bishops and nobility. It cost above 26,000l. which was a very large sum for those days. The spire, which is of free-stone, stands in the centre of the cathedral, and is deservedly admired, being the highest in the kingdom, viz. 410 feet from the ground, which is twice the height of the monument in London. It is therefore surprising to think, that the walls of it, upon examination after the great storm in 1703, were found near the top to be little more than four inches thick. Since this they have been strengthened with bands of iron, which perhaps may preserve the spire as long as the rest of the building. In short, the outside of this cathedral is truly magnificent, but the inside does not come up to it; for though the carving, what little there is of it, is good, the painting is but indifferent. It is remarked of this fine structure, that its doors are equal in number to the months of the year, its windows to the days, and its pillars and pilasters to the hours *. The latter are a sort of fusile or cast marble, the art of making which is either quite lost, or little understood. There is no ascent to the choir, which somewhat resembles a theatre, being painted with golden pannels, intermixed with garlands of roses and other flowers, which run round the tops of the prebendaries stalls. The pillars which support the bishop's throne are gilt, and it is painted all over with flowers upon white.

* These remarkable circumstances are summed up in the following lines, which are a translation of some Latin ones to the same purpose:

As many days as in one year there be,
So many windows in one church we see:
As many marble pillars there appear,
As there are hours throughout the fleeting year;
As many gates as moons one year does view:
Strange tale to tell, yet not more strange than true.

As to the dimenſions of this church, the length of it from eaſt to weſt, including the buttreſſes, is 478 feet; that of the tranſept from north to ſouth 210; and the height of the vaulting is 80.—But we muſt not forget the chapter-houſe, which is an octogon, no leſs than 150 feet in circumference, and yet the roof has no other ſupport than a ſmall marble pillar in the centre; ſo that it is reckoned a curioſity ſcarce to be matched in Europe.

HERE we ſhall juſt mention the cathedral of Lincoln, though perhaps it ſhould naturally have followed that of York, there being a contention between them which has the preference in extent, though we think it ought to be decided in favour of York. In point of ſituation however that of Lincoln has infinitely the advantage, as it ſtands on a high hill, which makes it conſpicuous to a vaſt diſtance *. The middle tower is reckoned the higheſt in the kingdom, and had formerly a ſpire, but at preſent there are only four ordinary pinacles, one at each corner. The catharine-wheel windows are very curious, as are alſo the chapter-houſe, cloyſters, and library. The circumference of the famous great bell here, uſually called Tom of Lincoln, is 22 feet 8 inches: it weighs near five tons, and will hold 424 gallons ale-meaſure.

As we are not far from Boſton, it is proper to take notice of its church, which is reckoned the largeſt pariſh-church without croſs-iſles in the whole world, being 300 feet long within the walls, and 100 feet wide. Its roof, which is handſomely cieled with Iriſh oak, is ſupported by 24 tall

* The Monks concluded, from the magnificence and elevation of this ſtructure for divine worſhip, that the Devil muſt needs look upon it with an envious eye; and hence the proverb of a man who has malice and envy in his countenance, He looks as the Devil over Lincoln.

and

and ſlender pillars. The tower or ſteeple is famous for its height and workmanſhip, being 100 yards high, including the octogon lanthorn on the top, which is admired for the thinneſs of the ſtone-work. This extraordinary height makes it viſible a long way on every ſide, and eſpecially towards the ſea; ſo that it is a very uſeful guide to mariners on that dangerous coaſt, as well as the wonder of travellers.—Grantham in this county has alſo a fine large church, with a ſpire ſteeple 280 feet high, which is generally reported to ſtand awry; but this is a vulgar error.

SINCE we have mentioned ſome pariſh-churches, we ought by on means to forget that of Fairford in Glouceſterſhire, remarkable for its twenty-eight windows of the fineſt painted glaſs in England. They contain the material Hiſtories of the Old and New Teſtament, from the ſerpent's tempting Eve, to the aſcenſion of our Saviour, and the deſcent of the Holy Ghoſt in cloven tongues. In the weſt window the Laſt Judgment is admirably repreſented; and in other windows are the figures of the twelve apoſtles, the four evangeliſts, and ſome of the principal fathers of the church. The whole was deſigned by the celebrated Albert Durer, an Italian; and the colouring in the drapery, and ſome of the figures, is ſo well performed, that Vandyke was of opinion, it could not be exceeded by the pencil. This beautiful glaſs was taken by Mr. John Tame, a merchant of London, in a prize-ſhip bound for Rome; who, having purchaſed the manor of king Henry VII, built this church at Fairford, on purpoſe to adorn it with the glaſs, which was buried in the grand rebellion, and by much care ſince has been preſerved entire to this day.

IF we look into Scotland, we ſhall find many ancient and magnificent churches, which we cannot here particularly deſcribe. The Great high Kirk at Edinburgh (formerly its cathedral) deſerves to be mentioned, which is built of hewn ſtone in form of a croſs, and ſtands in the High-ſtreet in the centre of the city. It is adorned with ſome ſtone-pillars and arches, but is moſt remarkable for its lofty tower, with a large open cupola of curious workmanſhip, repreſenting an imperial crown; of which that over St. Nicholas's church in Newcaſtle is a model, but does not come up to it by far.

THE cathedral at Glaſgow, is a vaſt and ſtately edifice, dedicated to St. Mungo, who was biſhop here about the year 560. The ſeveral rows of pillars, the high towers, and the lofty ſpire (the higheſt in Scotland) that riſes from a ſquare tower in the middle of the croſs, ſhew the ſkill of the architect, and ſurpriſe the beholders.

THE church of St. Magnus, at Kirkwall, in Pomona, the chief of the Orkney iſlands, (formerly a cathedral, but now only a pariſh church) is a beautiful and magnificent ſtructure, which in this part of the world is the more ſurpriſing. It is built of free-ſtone, and has a fine ſteeple in the middle of it erected on four large pillars, with fourteen others on each ſide, which ſupport the roof. Its three gates are chequered with red and white poliſhed ſtones, emboſſed and elegantly flowered.—But it is time to have done with this part of our ſubject, on which perhaps the reader may think we have dwelt too long already.

AFTER this account of the ſacred edifices that adorn our Iſland, it is proper to give a brief deſcription of ſome of the royal palaces; amongſt which, whether we regard the ſtructure or the

pleaſantneſs

pleasantness of the situation, Windsor-Castle deservedly claims the pre-eminence. This place appeared so charming a spot to William the conqueror, that having purchased it, by exchange, of the monks of Westminster-Abbey, he built here a hunting-seat, and had several little lodges, for the conveniency of his sport, in the adjoining forest. It was afterwards rebuilt by Henry I. and in the reign of Richard I. we find it looked upon as a place of strength: but its present magnificence is chiefly owing to Edward III, who enlarged, altered, and beautified it at a vast expence*; not but that most of his successors seem to have taken a pleasure in contributing to its grandeur.

THE whole consists of two square courts, between which stands the round tower, wherein are very neat apartments for the governor. In the middle of the inner square, called the Higher ward, which is properly the royal palace, we see a fine equestrian statue of King Charles the Second, who took great delight in this place, and very much beautified the lodgings with curious paintings and other ornaments. A noble terrace-walk †, bounds

* William of Wickham (afterwards bishop of Winchester) had the direction of the work; and it is said he caused these words, This made Wickham, to be cut in the wall of the little tower, which from him is called Winchester tower to this day: but this inscription, which rendered it dubious whether he made the castle or the castle made him, had like to have lost him his Majesty's favour, till he cleared it up by assuring the King, that he did not assume the honour of the work to himself, but only meant that the castle had been the making of him, by the riches and reputation the building of it had gained him.

† This terrace was added by Queen Elizabeth, who generally used to walk there an hour before dinner, if not hindered by windy weather, to which she had a peculiar aversion; but she liked well enough to walk in a calm rain, with an umbrella over her head.

the outside, and affords a delightful and extensive prospect over the neighbouring country. This walk is very spacious on the north-side, and is over-looked by the royal apartments; those of King Edward the Third, which were on the north-side, being now allotted (with the rest of the square) to the great officers of the crown. The guard-chambers are well furnished with arms, which are curiously disposed in a great variety of figures; and the cieling of one of them is finely painted, representing BRITANNIA seated on a globe, the Indies supplying her with wealth, and Europe offering her an imperial diadem. Nothing can exceed the beauty of St. George's-Hall, at the upper end of which we see the picture of King William on horseback, and underneath him appears to be an ascent of ten marble steps; but when we come almost close to them, we find the skill of the painter had imposed upon us, and are agreeably surprised at the deception. One side of this noble room is adorned with figures as big as the life, representing Edward III. receiving his triumphant son the Black Prince, who presents to his father the kings of France and Scotland Prisoners. At the west end of the hall is the chapel royal, which is finely painted with scripture histories; and the carved work is at least equal to any in the kingdom. In the presence-chamber we see a Judith and Holofernes, as also a Magdalen, both finished with a masterly hand. In the bed-chamber the Murder of the Innocents is curiously represented; and the cieling of the closet is adorned with the story of Leda and the Swan. In the gallery is the fine piece of the daughter giving suck to her father in prison. Duns Scotus, who is said to have killed himself by an intense application to his studies, and the Miser counting his Money, are both excellent pieces.

But

But it would take up too much time, as well as room, to enumerate all the admirable paintings and other curiosities that adorn this palace.

THE other square, called the Lower Ward, is remarkable for the chapel of the Order of the Garter *, one of the most beautiful pieces of ancient workmanship to be seen in England. The coats of arms, and the various imagery and other ornaments, not only of King Edward III, but of several of the first knights companions, are well finished, and have stood out against the injury of time to admiration. In the choir are stalls for the Knights of the order, and a throne for the sovereign; and in the middle of it are also stalls for the Poor Knights †, (as they are called) who live in a sort of hospital or college on the south side of the square.

To what has been already said of this stately palace I shall only add, that though it wants a garden, the beauty and pleasantness of its parks, and the neighbouring forest, seem to supply the deficiency. The little park is above three miles round, the great one about fourteen, and the forest between thirty and forty.

* This is a military order, instituted by King Edward the Third, consisting of twenty-six knights or companions, whereof the King of England is always sovereign or chief. Some say it was first erected in honour of a garter of the Countess of Salisbury, which she dropped in dancing, and King Edward picked up; but our best antiquaries set this account aside as fabulous, and take it to have been instituted on occasion of the victory gained over the French at Cressy, when that Prince (say some historians) ordered his garter to be displayed as a signal of battle.

† These were originally twenty-six in number, and were to be gentlemen wounded in the wars, or impaired by indigence or age. They are now reduced to eighteen, with an allowance of 40l. a year each; and are obliged, by their order, to go in their robes twice a day to church, to pray for the sovereign and knights of the garter.

THE royal palace of Hampton-Court, built by the famous Cardinal Wolſey, deſerves to be mentioned, though it might be tedious, after ſaying ſo much of Windſor-Caſtle, to be particular in deſcribing either the building or its ornaments. It is pleaſantly ſituated on the river Thames, nor is the ſtructure inferior to its ſituation, having two very magnificent fronts, and being every way fit for the reception of a royal family. The gardens are exceeding beautiful; in which particular, but in no other, it has the advantage of the palace at Windſor. The apartments are richly furniſhed, and adorned with excellent paintings; but of all the noble pieces this palace contained, none have been much or ſo deſervedly admired, as the Cartoons of the celebrated Raphael, which were brought into England by King William, and are not to be matched in Europe. It is ſaid, that Louis XIV. offered 100,000 louis-d'ors for them, but they are valued at 400,000l. Sterling.—The reſt of the royal palaces, though beautiful enough, (eſpecially that at Kenſington) merit no particular deſcription; we ſhall therefore proceed to take a view of ſome of the fine ſeats of our nobility.

WE have already obſerved, that the Duke of Devonſhire's ſeat at Chatſworth is reckoned one of the Wonders of the Peak, and it very well deſerves the name, as it is the aſtoniſhment of every ſpectator. This magnificent pile of building is ſituated on the eaſt ſide of the river Derwent, which in calm weather glides gently enough, but is very rapid, when haſty rains or melted ſnows are poured into its channel from the adjacent mountains. From the river (which has a handſome ſtone bridge over it) we approach the weſt front of the houſe by a venerable walk of trees. The iron gates and baluſters before the court

court are a noble piece of work, which are terminated at the corners next the road by two large ſtone pedeſtals, curiouſly adorned with trophies of war in Baſſo Relievo*. The building is a ſquare, with a piazza of Doric columns, each of one ſtone, running round the inſide. The bath-room is all of marble, very curiouſly wrought; and the cielings and walls of the apartments are adorned with fine paintings by Vario, and other eminent maſters. Scarce any thing comes up to the beauty of the chapel, the altar-end and floor being all marble, the ſeats of cedar, and the walls and cieling painted by the beſt hands.

As to the gardens, they are full of canals, baſons and water-works of various forms and contrivance; amongſt which is an artificial willow-tree of copper, with water dropping from the leaves. But the greateſt curioſity of this kind is a wonderful caſcade, which, iſſuing from a neat ſtone-building, falls down a hill a quarter of a mile in length, over ſteps like a pair of ſtairs, making ſuch a noiſe and ſuch a broken appearance, as may be eaſier conceived than deſcribed, till at laſt it ſinks under-ground and diſappears. The green-houſes, ſummer-houſes, orangeries, &c. are very beautiful, and the walks are embelliſhed with fine ſtatues, urns, and other proper ornaments †.

BLENHEIM-

* The term Relievo is applied to a figure which projects or ſtands out from the ground or plane whereon it is formed. There are three kinds of Relievo, called Alto, Mezzo, and Baſſo: the firſt is when the figure projects almoſt as much as the life; the ſecond when it ſeems cut in two, only one half of it riſing from the plane; and the laſt when the work is raiſed but a little from its ground, as in medals, vaſes, and the frontiſpieces of buildings, particularly the hiſtories, feſtoons, foliages, and other ornaments of frizes.

† It was a fine compliment which Marſhal Tallard paid to the late Duke of Devonſhire, who had entertained him for a

few

BLENHEIM-HOUSE, at Woodſtock in Oxfordſhire, is a vaſt and magnificent pile of building, deſigned to perpetuate the memory of the ſignal victory, obtained by the allies over the French and Bavarians near the village of Blenheim on the banks of the Danube *. This noble ſeat, together with the manor of Woodſtock, was ſettled by the Britiſh parliament on the Duke of Marlborough and his heirs, as a grateful acknowledgment for his bravery and conduct on that occaſion. The hall is lofty, and finely painted by Sir James Thornhill and others. Moſt of the rooms are enriched with marble chimney-pieces, tables, &c. but more by the incomparable paintings, and eſpecially the hangings, repreſenting the Duke's glorious actions. Among the pictures are ſeveral large pieces by Rubens, particularly that celebrated one of himſelf, his wife and child. The Loves of the Gods, by Titian, a preſent from the king of Sardinia, is a valuable piece; and King Charles I. on horſeback, by Vandyke, is very much admired.

few days at this beautiful ſeat; When I return (ſaid he) into my own country, and reckon up the days of my captivity, I ſhall leave out thoſe I ſpent at Chatſworth.

* It appears from a manuſcript in the Cotton library, that there was a royal houſe at Woodſtock, ſo long ago as the time of King Alfred; and that King Henry I. was not the founder of it (as he is generally ſaid to be) but only rebuilt it. As for Henry II. who kept his fair Roſamond here, he made ſome additions to it, for the entertainment and ſecurity of his beautiful miſtreſs: notwithſtanding which, his jealous Queen, having got acceſs to her in the King's abſence, as tradition ſays, diſpatched her by poiſon. She was buried in a nunnery at Godſtow, with this jingling Latin epitaph, in which there is a luſus verborum not to be imitated in Engliſh.

Hic jacet in tumba roſa mundi, non roſa munda;
Non redolet, ſed olet, quæ redolere ſolet.

Within this tomb lies the world's faireſt roſe;
Tho' once moſt ſweet, ſhe'll now offend your noſe.

The

The gallery is exceeding beautiful, being lined with marble pilasters, and the pillars are of one piece, supporting a rich and curious entablature. Over a pediment in the front of the house facing the gardens is a fine marble bust of Lewis XIV, bigger than the life, taken from the gate of the citadel of Tournay. The gardens are well laid out, having fine walks, greens, espaliers, &c. and the vistos are terminated by some remarkable objects in the neighbouring country. But of all the curiosities about this stately edifice, perhaps none are more worthy of notice than the lofty bridge in the Park, consisting of one arch above 190 feet wide; and the vast obelisk erected in the principal avenue, whereon is inscribed an excellent summary of the Duke's actions and character, but too long to be here inserted.

BUT of all the seats of the British nobility, perhaps none deserves our observation more than the Earl of Pembroke's magnificent palace (for so it may justly be called) at Wilton near Salisbury, which was begun in the reign of Henry VIII. on the ruins of a suppressed Abbey, and in that of Edward VI. the great quadrangle was finished. About sixty years ago the hall-side was burnt down, but was rebuilt in a sumptuous manner by the late Earl, then Lord high Admiral of England; but the other parts, rebuilt by the first Philip Earl of Pembroke, were the design of Inigo Jones, and were finished in 1640. The garden-front in particular, which is 194 feet long, is reckoned one of the best pieces of that celebrated architect. In the middle of the platform, which is paved with free-stone, there is a fine marble fountain. When we enter the house, on one hand is the hall, in which are a marble-shuffle-board, and two large marble-tables; and on the other hand are two handsome parlours, in the first of which is a fine

picture

picture of Christ washing the feet of his apostles, and another representing little shepherds and country utensils. Between this and the other parlour is a portico supported by two beautiful pillars of black and spotted porphyry. As to the grand apartment, it is allowed to be one of the noblest in Europe; and its hall (which is twenty yards long, ten high, and as many broad) is adorned with most admirable pictures by Vandyke, particularly a celebrated family-piece *, twenty feet long and twelve high, the figures whereof are not only as large as the life, but seem to be alive indeed †. Hence we ascend the grand geometrical stair-case, the first of the kind in England; at the foot of which we see a Grecian statue of Bacchus, of white marble, with a young Bacchus upon his shoulder eating grapes, a piece of excellent sculpture. The whole stair-case, and some of the rooms at the top of it, are crowded with pictures done by the best Italian and Flemish masters: so is also another fine stair-case, at the foot of which is a curious marble statue of Flora. The saloon, which is ten yards square, is likewise adorned with family-pieces, most of them by Sir Peter Lely. In both these rooms, as well as in many others, are marble chimney-pieces of curious workmanship, which the first Earl of Pembroke brought over from Italy. There are some of white marble done by Inigo Jones, than which nothing can be more beautiful; and in one of the garrets there is a piece of black marble over the chimney, in which

* It is said, Sir Godfrey Kneller would have given three thousand pounds for this piece, and that the late French King offered as many louis-d'ors for it as would cover it.

† There are the Earl of Pembroke (Lord chamberlain of the household) and his lady sitting, with their five sons standing on the right, and the Earl of Carnarvon and his lady (their daughter) on the left; and before them stands their eldest son and his lady, a daughter of the duke of Buckingham.

Salisbury

Salisbury cathedral and its spire may be seen almost as plain as in a looking-glass. But these things are trifles, compared to the noble collection of antique busts that adorns this place, consisting of the philosophers, poets, orators, &c. of ancient Greece and Rome; and among the curiosities of this kind is a statue of the Egyptian goddess Isis on a table of fine granite. In short, the house is filled with such a number of beautiful pieces, both of sculpture and painting, as would require a volume to describe; not to mention the large heads and horns of stags, the collection of head-pieces, coats of mail, and other armour for horse and man *, which are curiosities worth observation.—If we look into the gardens, which are exceeding beautiful, we shall find enough to admire, but perhaps nothing more than a magnificent bridge over a river that runs through them. Here is a grotto, the front of which is curiously carved, and within are black pillars of the Ionic order with white capitals, and four fine bas-reliefs brought from Italy. The banqueting-house on the bowling-green is very beautiful, having an Ionic arcade, and at the top of it a row of antique busts.—We are going too far; but we hope the reader will excuse our having detained him so long at this majestic and delightful seat, which cannot be too much admired.

We shall now give a short description of the Earl of Burlington's beautiful seat at Chiswick,

* The most remarkable suits of armour in this collection are those of King Henry VIII, Edward VI, and a rich suit of an Earl of Pembroke named Black Jack, which he wore when he besieged and took Bologne in France, where he commanded in chief under the King. There are some other suits, which by the work seem to have belonged to persons of distinction; but the rest, about a hundred, are only for common horsemen.

which

which for elegance of taſte is ſaid to ſurpaſs any thing of its kind in England, if not in Europe. In the front of the houſe is a neat gravelled court, with yew-hedges on each ſide; and at a little diſtance from the houſe are two rows of cedars, whoſe dark and ſolemn ſhade occaſions an agreeable contraſt with the white ſtructure that appears between them. We aſcend to the houſe by a noble flight of ſteps, on one ſide of which is the ſtatue of Inigo Jones, and on the other that of Palladio, two celebrated architects. The fluted pillars that ſupport the portico are of the Corintian order; and the cornice, frize, and architrave are as rich as poſſible: ſo that this front of the houſe gives at once ſurpriſe and pleaſure to every ſpectator. The other fronts, though plainer, have a noble boldneſs which cannot fail of pleaſing, eſpecially that towards the gardens. As to the inſide of the houſe, it would take up too much time to deſcribe its particular beauties, every thing being perfectly well finiſhed, the cielings finely gilt and painted, and the rooms filled with curious pictures, done by ſome of the beſt hands in Europe.

THE ſame elegant taſte appears in the gardens. Deſcending from the houſe we enter on a lawn of graſs, planted with ever-greens, and adorned with two rows of large ſtone vaſes. At the end next the houſe are two ſtone wolves, and at the farther end two large lions, which are very good pieces of ſculpture. Three antique ſtatues, dug up at Rome, with ſtone ſeats between them, and a cloſe plantation of ever-greens behind them, terminate this proſpect.—On the right-hand, as we go from the houſe, we look through an open grove of trees to the orangery; and on the left, we have an eaſy ſlope to a ſerpentine river, on

each

each side of which are clumps of ever-greens, and at the farther end is an enclosure, wherein we see an obelisk and a Roman temple. On one side of the river is a Wilderness, and on the other a handsome building, which is an exact model of the portico of Covent-garden church. With the earth and gravel thrown up, when this river was dug, they have raised a fine terrace, from whence we have a view of the adjacent country, and of the boats and barges upon the Thames, which greatly enlivens the prospect.—We shall say nothing of the cascade, the engine by which the water is raised not having answered the design so well as was expected.

Now we are speaking of the seats of our nobility, we cannot forbear mentioning a few of the many curiosities to be seen in Lord Temple's beautiful gardens at Stow in Buckinghamshire.—The entrance on the south-side of the gardens is between two square pavilions of the Doric order, designed by Sir John Vanbrugh, where immediately a surprising variety of objects present themselves to view. In the middle of a large octogon of water stands an obelisk near seventy feet in height; and at a distance we see two rivers, which join their streams, and fall into this spacious receptacle. On the right hand a Gothic building, dedicated to Liberty, crowns the summit of a hill, and on the left appears a pyramid, sixty feet high, dedicated to the memory of the above-mentioned architect. Having passed by three fine statues, we come to the cold bath, from whence we behold a natural cascade, or rather three, falling from the octogon into a large lake; by the side of which, in a rising wood, stands the Hermitage; and not far from thence the statues of Cain and Abel, fronting a neat structure, called the Veneris Hortus,

Hortus, or Garden of Venus. From the Belvidere a building designed by Mr. Gibbs, which is situated on the top of a mount, there is a noble prospect: nor should we forget the Temple of Friendship, from whence the pavilions at the entrance, the cascade, the lake and other objects, afford all together a delightful scene. This temple is a lofty square building of the Doric order, with three fine porticoes on the sides that appear to the garden. The cieling is adorned with historical pieces, and at the bottom of the room are ten pedestals, on which are placed the busts of Lord Cobham and his select friends. The Temple of Ancient Virtue is a rotunda * of the Doric order, by Mr. Kent; in which are four niches filled with the statues of Epaminondas, Lycurgus, Socrates, and Homer, with proper inscriptions over each. The Saxon temple is in a solemn grove, where the seven Saxon deities presiding over the several days of the week, are placed in niches round an altar; forming a scene that strikes the mind with an agreeable composure. Bacchus's temple is a brick building, with paintings in the inside, suitable to the character of that heathen deity. St. Augustine's cave is made up of roots of trees and moss, with a straw couch in it, and stands in the middle of a natural wood; which situation, with the oddness of the structure, makes an entertaining variety. Dido's cave stands also in a wood, but is a stone building. The Pebble Alcove is a pretty recess, where his Lordship's arms are curiously done in pebbles, and dis-

* This is a popular term in architecture for any building that is round within and without, whether it be a church, a saloon, or the like. The most celebrated Rotunda of antiquity is the Pantheon at Rome, dedicated to Cybele and all the Gods by Agrippa; but since consecrated by Pope Boniface IV. to the Virgin Mary and all the saints.

played

played in proper colours: so likewise is the Sleeping Parlour, which is a square building in a wood, where six walks center; and within it are painted the heads of the Cæsars, with festoons of fruit and other ornaments. The Grotto is a curious piece of workmanship; and so is the Shell-Pavilion, which is supported by six wreathed columns. The Chinese house built in a pond, is a curiosity worth observing; being ingeniously painted on the outside in the Chinese taste, and the inside is Indian japan.

WHEN the spectator has viewed all these beauties, and many more than we can here enumerate or describe, let him be conducted into the Elysian Fields, and he will be charmed beyond imagination with the monuments of the British worthies * that adorn the delightful place. But instead of disgracing these fine gardens any longer with an unequal description, I shall conclude with observing, (as a late writer has done) that the late Lord Cobham, who laid them out, has here em-

* These are King Alfred, Edward Prince of Wales, Q. Elizabeth, King William the Third, Sir Walter Raleigh, Sir Francis Bacon, Sir Thomas Gresham, Sir Francis Drake, Sir Isaac Newton, Sir John Barnard, Inigo Jones, Pope, Shakespear, Milton, and some others.—What sort of persons Lord Cobham thought worthy of a place in this Elysium, is well expressed in the following lines of Virgil, which we read there upon a square of black marble, placed under a Mercury standing in the niche of a pyramid:

Hic manus ob patriam pugnando vulnera passi,
Quique pii vates & Phœbo digna locuti,
Inventas aut qui vitam excoluere per artes,
Quique sui memores alios fecere merendo.

Here are the Bands who for their country bled,
And Bards whose pure and sacred verse is read;
Those who, by Arts invented, Life improv'd,
And by their Merits made their Mem'ries lov'd.

beliſhed nature with art, and ſupported art by conſulting nature, in as elegant a taſte, as perhaps was ever ſhewn in any modern or even antient performance of this kind. We here find a moſt agreeable variety of ſhady woods and open lawns; ſome proſpects terminated by a well-choſen point of view, others bounded by the horizon alone; walks which of themſelves create delight, but always end with ſomething that increaſes the pleaſure and raiſes the admiration. The pavilions, pyramids, obeliſks, temples, ſtatues, buſtoes, monuments, inſcriptions, are all nobly finiſhed, and are deſigned to inſtruct as well as to pleaſe the beholder. In a word, nothing is here wanting which air, earth, and water, in the hands of men, can contribute to compleat a terreſtrial paradiſe.

PERHAPS the reader will not be diſpleaſed, if in this place we ſhould juſt mention a few things moſt worthy of obſervation in our two famous Univerſities of Oxford and Cambridge; for a particular deſcription of them would far exceed the intended limits of our undertaking. Beſides the colleges and halls in Oxford, ſeveral of which are large and beautiful ſtructures, there are ſome other publick buildings that make a glorious appearance. The firſt is the Theatre, a magnificent fabric, raiſed at the expence of Dr. Sheldon, archbiſhop of Canterbury, under the direction of Sir Chriſtopher Wren, and preſented to the Univerſity by the generous founder for the performance of ſcholaſtic exerciſes. The walls round the area, within which it ſtands, are adorned with ſeveral Grecian and Roman antiquities, the greateſt part whereof is owing to the bounty of the earl of Arundel. The decorations in the front of the building are very curious and beauti-

ful;

ful; but the roof, which is supported without beams, and finely painted, can never be sufficiently admired.

AT the west end of the Theatre stands the Museum *, a stately pile, erected at the charge of the University, for the promoting and carrying on several parts of curious and useful learning. The lower part of this edifice is a Laboratory, furnished with all sorts of furnaces and other materials for chymical operations. Above this is a spacious hall; and the upper chamber is a repository of a noble collection of natural and artificial curiosities, most of them presented to the University by Elias Ashmole, Esq; in 1683, when the building was finished, which for that reason is called Museum Ashmoleanum. Very considerable additions have been made to it since that time; as of hieroglyphicks, and other Egyptian antiquities, by Dr. Huntington; an entire mummy, by Mr. Goodyear; a large cabinet of natural rarities, and Roman antiquities, by Dr. Lister; a collection of medals by Dr. George Clarke, and many valuable curiosities by other benefactors.

THE Bodleian library is one of the greatest ornaments of this University, there being few in Europe that exceed it in any respect, and none that can boast of such a treasure of oriental manu-

* This name was originally used to signify a place in the palace of Alexandria, which took up at least a fourth part of the city; so called, as being destined and set apart to the Muses and the Sciences. Here were lodged and entertained a great number of learned men, who were divided into companies or colleges, to each of which was allotted a handsome revenue. This establishment is attributed to Ptolemy Philadelphus, who here fixed his library. Museum is now become a general denomination, being applied to any place set apart as a Repository of things that have some immediate relation to the Arts or the Muses.

scripts.

ſcripts. The deſign of this publick library was firſt laid by Sir Thomas Bodley, in the year 1597, who repaired the old library of Humphry duke of Glouceſter, and furniſhed it with a large collection of printed books and manuſcripts, which he had purchaſed at a prodigious expence from all parts of the world. It was firſt opened in 1602, ſince which time it has been continually increaſing by the benefactions of great and learned men; particularly Sir Rob. Cotton, Sir H. Savil, Archbiſhop Laud, Sir Kenelm Digby, Mr. Allen, Dr. Pocock, Mr. Selden, Biſhop Tanner, and others. Over it is a ſpacious gallery, adorned with pictures of the ſeveral benefactors, &c. and with the famous marbles * preſented to the Univerſity by the earl of Arundel. Sir T. Roe and others have alſo enriched this place with a large collection of Greek, Roman, Britiſh, Saxon, and other coins. Over the porch, upon a pedeſtal of black marble, ſtands a fine ſtatue of the earl of Pembroke, to whoſe Generoſity this library is much indebted.

FOR a Repoſitory of the ſame kind (I mean for a Publick Library) there has been lately erected

* On theſe marbles are engraved, in capital letters, inſcriptions that contain the moſt noted Greek Epochas from the reign of Cecrops, the founder of the Athenian monarchy, to Diogenes the magiſtrate; that is, for the ſpace of 1318 years. Hence we learn the time when the moſt famous cities of Greece were founded, when the greateſt men lived that were the ornaments of that country, and other particulars, which give great light to the hiſtory of thoſe ages. — Archbiſhop Uſher is of opinion, this Chronicle was written 265 years before our Saviour. They were found in the iſland of Paros in the Archipelago, and purchaſed by Thomas Earl of Arundel, whoſe grandſon Henry preſented them to the Univerſity of Oxford; whence they are uſually called Marmora Arundeliana, or the Arundel Marbles. — An account of all theſe inſcriptions was publiſhed in 1676 by Dr. Prideaux, and ſince by Mr. Michael Maittaire, with a great number of annotations.

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at Oxford a lofty and magnificent ſtone building, purſuant to the will of the celebrated Dr. Ratcliffe, who left 40,000l. for that purpoſe, 100l. a year for ever to furniſh it with books, and the ſame annual ſum to keep it in repair. This noble benefaction, which does honour to the Doctor's memory, will add to the renown of the Univerſity, and in a courſe of years it may probably be ſo improved, as to vie with the fineſt library in Europe.

NOR ſhould we forget the Clarendon Printing-houſe, none of the leaſt ornaments of this ſeat of learning, nor perhaps to be equalled by any thing of the kind. It is a handſome ſtrong building, 115 feet in length, beſides the ſpacious porticoes in the north and ſouth fronts, which are ſupported by detached columns of the Doric order. The top of it is adorned with the Nine Muſes; and amongſt them are Homer, Virgil, and Thucydides. It was founded in 1711, and being built partly with the money ariſing to the Univerſity from the copy of Lord Clarendon's Hiſtory, it thence received its name.

THUS much for the Univerſity of Oxford, which in point of ſituation, good air, the number of colleges, and the magnificence of the buildings in general, has the advantage of Cambridge; though the latter may boaſt of particular ſtructures, equal at leaſt, if not ſuperior, to any in the former. Trinity College (for inſtance) is a large, regular, and ſtately pile of building, which in Mr. Camden's time, as he himſelf affirms, was ſcarce inferior to any in Chriſtendom: and as it has ſince received the addition of a noble and beautiful library, which many learned men have with emulation contributed to enrich, it may

juſtly be placed in the firſt rank of Colleges, and even above ſome foreign Univerſities.

KING'S COLLEGE, though it was never compleated according to the magnificent model firſt laid down, is nevertheleſs a very handſome ſtructure; but its chapel, whether we conſider the roof, the carvings, or the ſtain'd glaſs in the windows, exceeds any thing of its kind, and upon the whole is deſervedly admired as one of the fineſt pieces of architecture in the world, though it had the diſadvantage of being carried on with great interruptions.

ST. JOHN'S COLLEGE is a beautiful building, has an excellent library, and enjoys a pleaſant ſituation. And to conclude, (ſince we have not room to be more particular) Clare-Hall, which about eighty years ago was all rebuilt with free-ſtone, is at preſent one of the neateſt and moſt uniform ſtructures in the whole Univerſity.

WE ſhall now deſcribe the Duke of Bridgewater's magnificent work, near Mancheſter, which is, perhaps, the greateſt artificial curioſity of its kind in the world. This is a new ſubterranean Canal conſtructed to convey coals out of a mine, to Mancheſter and other places, and capable of being applied to many other conſiderable purpoſes. It begins at a place called Worſly Mill, about ſeven miles from Mancheſter, where, at the foot of a large mountain is a baſon, that forms a great body of water, which ſerves as a reſervoir or head to this navigation; and in order to draw the coals out of the mine, which runs through the hill to an amazing extent, a ſubterraneous paſſage is formed, big enough for long flat-bottomed boats to go up to the mines. This paſſage alſo ſerves to drain the coal pits of that water, which would other-

otherwiſe obſtruct the work, and is to be carried on three miles under ground, and farther, if it be neceſſary.

HAVING obtained a ticket to ſee this curioſity, which is done by ſending your name to the Duke's houſe at about half a mile diſtance, you enter with lighted candles the ſubterraneous paſſage in a boat made for bringing out the coals. This boat is fifty feet long, four and a half broad, two feet three inches deep, and each end terminates in a point. Through this paſſage you proceed, towing the boat on each hand, by a rail, to the extent of a thouſand yards, which is near three quarters of a mile, before you come to the coal works. The paſſage then divides, one branch continuing in a ſtraight line three hundred yards farther, among the coal works, while another turns off, and proceeds three hundred yards to the left; and each of them may be extended farther, or other paſſages be opened from them, to any other part, as the mines may run, and neceſſity require. Hence thoſe who go up both paſſages, travel near three miles under ground, before they return. The paſſages in thoſe parts, where there were coals or looſe earth, are arched over with brick, and in others the arches cut out of the rock. At certain diſtances, there are niches on the ſide of the arch, with funnels or openings through the rock, to the top of the hill (which is in ſome places, near thirty ſeven yards perpendicular, in order to preſerve a free circulation of freſh air, as well as to prevent thoſe damps and exhalations that are ſometimes ſo deſtructive in works of this kind, and to let down men to work, in caſe any accident ſhould happen to the paſſage. Beſides, near the entrance of the paſſage, and again farther on, there are gates

to close up the arch, and prevent the admission of two much air, in windy and tempestuous weather.

THE arch is at the entrance about six feet wide, and about five feet high, from the surface of the water; but on entering farther in, it grows wider; so that in some places, boats that are going to and fro, can easily pass each other; and when you come among the pits, the arch is ten feet wide.

COALS are brought from the pits to this passage or canal, in little low waggons, that hold near a ton each; and as the work is on the descent, are easily pushed forward by a man, on a railed way, to a stage over the canal, and then shot into one of the boats already mentioned, each of which holds about eight tons. One of these boats thus loaded, is conveyed through the passage by means of the rails, by a single man, to the bason at its mouth, where four, five, or six of these boats, being linked together, are drawn by one horse, or two mules, by the side of the canal, to Manchester, or the other places, to which the canal is conveyed.

THERE are also on the canal a considerable number of broad boats that hold about fifty tons, which are likewise drawn by one horse; besides about fifty of the narrow ones.

IT is necessary to take some notice of an overshot mill, near the mouth of the passage, which is so well contrived as to work, by the force of the current, three pair of grinding stones for corn, a dressing or bolting-mill, and a machine for sifting sand, and compounding mortar for the buildings. The mortar is made by a large stone, which is lain horizontally, and turned by a cog-wheel underneath it, and this stone, on which the mortar

mortar is laid, turns in its courſe two other ſtones that are placed upon it obliquely, and by their weight and friction work the mortar underneath, which is tempered and taken off by a man employed for that purpoſe. The bolting-mill is alſo worthy notice. It is made of wire, of different degrees of fineneſs, and at one and the ſame time diſcharges the fineſt flour, the middling ſort, and the coarſe flour, as well as the pollard and the bran; without turning round, the work being effected by bruſhes of hogs briſtles within the wire.

FROM the baſon, of which we have been ſpeaking, the canal takes its courſe to Mancheſter, which is nine miles by water, though but ſeven by land, the other two miles being loſt in ſeeking a level for the water. The canal is broad enough for the barges to paſs or go a-breaſt; and on one ſide of it there is a good road made, for the paſſage of the people concerned in the work, and for the horſes and mules that draw the boats and barges. To perfect this canal, without impeding the public roads, or injuring the people in the country, the Duke has, in many places, built bridges over it, and, where the earth was raiſed to preſerve the level, arches under it; all of which are built chiefly of ſtone, and are both elegant and durable: but what principally ſtrikes the common obſerver, is a work raiſed near Barton Bridge, to convey the canal over the Merſey, a large navigable river, that runs from Mancheſter to Liverpool. This is done by means of three ſtone arches, ſo ſpacious and lofty, as to admit a veſſel ſailing through them; and it is indeed a moſt noble ſight to ſee large veſſels in full ſail under this aqueduct, with the Duke's veſſels ſailing at the ſame time over all, and near fifty feet above the navigable river. At convenient diſtances there are, by the

ſides of the canal, receptacles for the ſuperfluous water; and at the bottom of the canal, machines conſtructed on very ſimple principles, and placed at proper diſtances, to ſtop and preſerve the water, in caſe any part of the bank ſhould happen to break down. The aqueduct is perfected as far as Mancheſter, where coals are brought from the mine in great plenty, and another large baſon is making there, for the reception of the veſſels employed in this work.

BESIDES this, there is another canal, which takes its riſe from that we have deſcribed near Barton Bridge, and goes to Stratford; from whence it will probably be extended on the Cheſhire ſide of the river Merſey, as far as Liverpool; and when this is compleated, people may travel with as much ſafety, certainty, and diſpatch, as in the trachtſcoots in Holland and Flanders, and in the ſame manner; for, as here is no current to impede the veſſel, one horſe will draw 50 ton of coals after the rate of four miles an hour; and would trot with a light boat and paſſengers ſix or ſeven; and if the boats were covered, we might travel by night or by day, and ſleep, read, write, play at cards, drink tea, and partake of a thouſand diverſions.

ALL who ſee the work wonder how it could be effected; and thoſe who conſider the contrivance of the workmen, are ſtill more amazed at the œconomy with which it is carried on. Mr. Brindley, the principal engineer, is one of thoſe great geniuſſes which nature ſometimes rears by her own force, and brings to maturity, without the neceſſity of cultivation. His whole plan is admirable, and ſo well concerted, that he is never at a loſs, for if any difficulty ariſes, he removes it with amazing facility. Beſides the machines already mentioned,

mentioned, as well as others which we have paſſed over for want of room, he has contrived ſome caiſſons of an admirable conſtruction, for raiſing of earth, to preſerve the level; and as theſe, as well as a ſmith's forge and carpenter's and maſon's work-ſhops, are floated on the canal, and follow the work from place to place, there is little hindrance from accidents. It is alſo here to be obſerved, that the refuſe of one work, is made to conſtruct the material parts of another: thus the ſtone which was dug up to form a baſon for the boats, at the foot of the mountain, as well as that taken out of the rock, to make the ſubterraneous paſſage, are hewn into different forms and dimenſions, to build bridges over the water, or arches to ſupport the aqueduct, while the clay and other earth taken up to preſerve the level in one place, are carried down the canal, to raiſe the land to a level, in another. In ſhort, grandeur, elegance, and œconomy, are here happily united. At firſt view you would think the work was intended to aſtoniſh; but upon a cloſer inſpection you find nothing but what is proper and neceſſary; and that the whole has been done at an expence, no ways adequate to the undertaking.

To return to the city of London, where there are many ſtructures of a different kind from any yet deſcribed.

Of all the fortreſſes in this kingdom the moſt remarkable is the Tower of London, not on account of its ſtrength, and the works deſigned to render it impregnable, for in theſe it is greatly excelled by ſeveral others; but from its containing the antient records, the mint, a noble magazine of arms, and the crown jewels. It is ſituated on the eaſt ſide of the city near the bank of the Thames, and was anciently a royal palace, but

originally consisted of no more than what is now called the White-Tower, a part of which was first erected by William the Conqueror, in the year 1076, and compleated by his son William Rufus, who in 1098, encompassed it with walls and a deep ditch, which is in some places a hundred and twenty feet broad. Additions were afterwards made to it by several of the succeeding princes, and king Edward the Third built the church. In 1638 the White-Tower was rebuilt, and since the restoration of King Charles the Second, it has been thoroughly repaired, and a great number of buildings added to it. Hence, besides the White-Tower, here are the offices of ordnance, of the mint, of the keepers of the records, the jewel office, the Spanish armoury, the horse armoury, the new or horse armoury, barracks for the soldiers, handsome houses for the chief officers residing in the Tower, and other persons; so that it has at present more the appearance of a town than of a fortress. New barracks have been lately erected on the Tower wharf, which parts it from the river, and upon the wharf is a line of about sixty pieces of cannon, which are fired upon state holidays. On this side of the Tower the ditch is narrow, and over it is a drawbridge: under the Tower-wall, on the same side, is a water-gate, commonly called Traitor's-gate, because it has been customary to convey traitors and other state-prisoners through it by water, to and from the Tower.

UPON the wall, parallel to the wharf, is a platform seventy yards in length, called the Ladies-line, from its being frequented in summer evenings by ladies, who walk under the shade of a row of lofty trees, and have a fine prospect of the shipping and the river Thames. From this

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line there is a walk round the Tower-walls, on which are three batteries, diſtinguiſhed by the names of the Devil's-battery, the Stone-battery, and the Wooden-battery, each of which is mounted with ſeveral pieces of large braſs cannon.

THE principal entrance to the Tower is on the weſt ſide, where there are two gates, one within the other, both large enough to admit heavy carriages, and parted by a ſtrong ſtone bridge built over the ditch.

WITHIN the outer gate is a fine collection of wild beaſts, conſiſting of lions, leopards, tygers, and other animals; together with ſeveral birds, among which are the golden eagle, the horned owl, and many others, all which are regularly fed, and attended with all poſſible care.

THE mint comprehends near one third of what is called the Tower, and contains the office of the mint, and the houſes of all the officers belonging to the coinage.

THE White Tower is a large ſquare ſtone building, with a watch-tower at each corner. It conſiſts of three very lofty ſtories, in the firſt of which is an armoury for the ſea-ſervice, containing various ſorts of arms curiouſly laid up for above ten thouſand ſeamen. The upper ſtories are filled with arms, and other warlike inſtruments and utenſils, as cheveaux de frize, pick-axes, ſpades and ſhovels.

AT a ſmall diſtance from the ſouth-weſt angle of the White-Tower, is the Spaniſh armoury, the depoſitory of the ſpoils of the Spaniſh Armada, fitted out to invade England in the reign of queen Elizabeth. Among the trophies preſerved here of this memorable victory, are the following: the Spaniſh general's halbert, which is covered with velvet, and has on the top the pope's head curi-

ouſly engraven; alſo his ſhield, upon which are repreſented the labours of Hercules, in moſt curious workmanſhip. A Spaniſh battle-ax, with a piſtol in the handle. An engine, called, from its figure, the Spaniſh Morning-ſtar, of which there were many thouſands on board, all with poiſoned points, intended to ſtrike at the Engliſh, in caſe they ventured to board the Spaniſh fleet. Thumb-ſcrews, of which there were ſeveral cheſts full on board. Spaniſh halberts, or ſpears, ſome of which are curiouſly engraved, and inlaid with gold. Spaniſh ſpades, or long ſwords, poiſoned at the points. The banner, which was to have been carried before the Spaniſh general. A piſtol in a ſhield, ſo contrived, as that the piſtol might be fired, and the body covered by the ſhield at the ſame time, the ſight of the enemy being taken through a ſmall grate, piſtol-proof. Several inſtruments of torture, &c.

BESIDES theſe, and ſeveral other things taken from the Spaniards, there are a number of other curioſities, as the Saxon and Daniſh clubs, which they are ſaid to have uſed in their conqueſt of England. What is called king Henry VIIIth's walking-ſtaff, which has three matchlock piſtols in it, and coverings to keep the charges dry; it is ſaid, that with this the king ſometimes walked round the city, to ſee that the conſtables did their duty. A large wooden cannon, called Policy, becauſe when king Henry VIII. beſieged Bulloign, the roads being impaſſable for heavy cannon, he is ſaid to have cauſed a number of theſe wooden ones to be mounted on proper batteries before the town, which ſo terrified the French commandant, that he gave up the place without firing a gun. The ax, with which queen Anne Bullen, and the earl of Eſſex, the favourite of queen

queen Elizabeth, were beheaded. A ſmall train of ten pieces of pretty little cannon, neatly mounted on proper carriages, a preſent from the foundery of London to king Charles I. when a child, to aſſiſt him in learning the art of gunnery. The perfect model of the admirable machine, the idea of which was brought from Italy by Sir Thomas Lombe, and firſt erected at Derby at his own expence, for making orgazine or thrown ſilk; with many other curioſities.

On the northward of the White-Tower is the grand ſtorehouſe, a noble building, that extends 245 feet in length, and 60 in breadth. It was begun by king James II. and finiſhed by king William III. who erected that magnificent room called the New or Small Armoury, to which there is a paſſage by a folding door adjoining to the eaſt end of the Tower Chapel, which leads to a grand ſtair-caſe; on aſcending which, you enter the armoury, and ſee what is called a Wilderneſs of Arms, ſo artfully diſpoſed, that at one view you behold arms for near eighty thouſand men, all bright, and fit for ſervice at a moment's warning; a ſight, which it is impoſſible to behold without aſtoniſhment. The north and ſouth walls are each adorned with eight pilaſters, formed of pikes ſixteen feet long, with capitals of the Corinthian order, compoſed of piſtols. At the weſt end, as you enter, are two curious pyramids of piſtols ſtanding upon crowns, ſceptres and globes, finely carved, and placed on pedeſtals five feet high. At the farther end are two ſuits of armour, one made for the warlike prince, Henry V. and the other for his ſon, Henry VI. over each of which is a ſemicircle of piſtols. Between theſe is repreſented an organ, the large pipes compoſed of braſs blunderbuſſes, and the ſmall of piſtols. On

one side of the organ is the representation of a fiery serpent, the head and tail of carved work, and the body of pistols, winding round in the form of a snake; and on the other side an hydra, whose seven heads are artfully combined by links of pistols. The inner columns and walls that compose the wilderness, are all formed of arms, bayonets and pistols, put up in the resemblance of half-moons and fans. The waves of the sea are represented in old-fashioned bayonets. The rising sun is seen irradiated with pistols, set in a chequered frame of marine hangers of a peculiar make. There are four beautiful twisted pillars, formed of pistols up to the top, which is about twenty feet high, and placed at right angles, in the centre of which is formed on the ceiling the representation of a falling star; you also see a large pair of folding gates, made of serjeants halberts of an antique make, and horsemen's carbines hanging in furbelows and flounces; Meduca's head, within three irregular ellipsis of pistols with snakes. Opposite the east wall is a grand figure of a lofty organ, ten ranges high, in which are contained above two thousand pair of pistols. On the south side is the figure of Jupiter riding in a fiery chariot, drawn by eagles, as if in the clouds, holding a thunderbolt in his left hand, and over his head is a rainbow: this figure is finely carved, and decorated with bayonets. The figures on this side answer pretty nearly to those on the other, till you come again to the centre, where, on each side a door leading to a balcony, you see a fine representation, in carved work, of the star and garter, thistle, rose, and crown, ornamented with pistols, &c.

UPON the ground-floor, under this magnificent armoury, is a room of the same dimensions, supported

ported by twenty columns, hung round with implements of war. This room, which is twenty-four feet high, is full of the moſt dreadful engines of deſtruction, among which are ſeveral of an ancient date and curious form.

To the eaſtward of the White-Tower is the horſe-armoury, in which is a repreſentation of the kings and heroes of this nation, ſome of them ſitting on horſeback, in the ſame bright and ſhining armour they were uſed to wear when they performed thoſe glorious actions, that give them a diſtinguiſhed place in the hiſtory of Great Britain. Here, aſcending the ſtair-caſe, and caſting your eye into the room, you ſee the figure of a grenadier in his accoutrements, with his piece reſting upon his arm, as if upon duty, ſo well executed, that it may be miſtaken for real life. Within the room, on the left hand, are figures, as big as the life, of horſe and foot, ſuppoſed to be drawn up in military order, to attend a line of kings on the other ſide of the room, who are ſhewn in the following order. King George I. in a complete ſuit of armour, holding his truncheon in his hand, and ſeated on a white horſe richly capariſoned, having a fine Turkey bridle gilt, with velvet furniture laced with gold. King William III. in the armour worn by Edward the Black Prince at the battle of Creſſy, mounted on a ſorrel horſe, whoſe furniture is green velvet, embroidered with ſilver, holding a flaming ſword in his right hand. King Charles II. in armour, with a truncheon in his hand, ſeated on a fine horſe richly capariſoned. King Charles I. in a rich ſuit of gilt armour, curiouſly wrought, preſented him by the city of London when he was prince of Wales. James I. on horſeback, in a complete ſuit of figured armour. King Edward VI. on horſeback, in a curious ſuit

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of ſteel armour, on which are depicted, in different compartments, a variety of ſcripture hiſtories. King Henry VIII. in his own armour of poliſhed ſteel gilt, holding a ſword in his right hand. King Henry VII. who likewiſe holds a ſword, and is ſeated on horſeback in a complete ſuit of armour, finely wrought, and waſhed with ſilver. King Edward V. who with his brother Richard, was ſmothered in the Tower. He is dreſſed in a rich ſuit of armour, holds a lance in his right hand, and a crown is hung over his head. King Edward IV. in a bright ſuit of ſtudded armour, holding a drawn ſword. King Henry VI. King Henry V. and king Henry IV. King Edward III. who has a venerable beard, and is dreſſed in a ſuit of plain bright armour, with two crowns on his ſword, in alluſion to his having been crowned king both of England and France. King Edward I. in a curious ſuit of gilt armour, and in ſhoes of male, with a battle-ax in his hand. William the Conqueror, in a ſuit of plain armour, who is the firſt in the line, though laſt ſhewn.

AMONG the other curioſities in this room, are the following. A complete ſuit of tilting armour, ſuch as the kings, nobility, and gentlemen at arms, uſed to wear, with the tilting-lance, the reſt for the lance and grand guard. A complete ſuit of armour made for king Henry VIII. when but eighteen years of age, rough from the hammer: it is at leaſt ſix feet high, and the joints in the hands, arms and thighs, knees and feet, play like the joints of a rattle-ſnake, and are moved with all the facility imaginable. A ſmall ſuit of armour made for king Charles II. when prince of Wales, and about ſeven or eight years of age, with a piece of armour for his horſe's head; the whole moſt curiouſly wrought, and inlaid with ſilver.

silver. The armour of lord Courcy, who having vanquished a French champion, had the privilege granted him and his successors of wearing their hats in the king's presence. Real coats of male, called Brigandine Jackets, consisting of small bits of steel, so artfully quilted one over another, as to resist the point of a sword, and perhaps a musket-ball; and yet so flexible, that the wearer may bend his body any way, as well as in an ordinary suit of clothes. An Indian suit of armour, sent by the Great Mogul as a present to K. Charles II. This is reckoned as a great curiosity, being made of iron quills, each about two inches long, finely japanned and ranged in rows, one row easily slipping over another: these are bound very strong together with silk twist, and are used in that country as a defence against darts and arrows. A neat little suit of armour, worn by a carved figure, representing Richard duke of York, the youngest son of king Edward IV. who, with his brother Edward V. was smothered in the Tower. The armour of John of Gaunt, duke of Lancaster, the son of Edward III. This is seven feet high, and the sword and lance of an enormous size. And a droll figure of one William Somers, said to have been king Henry VIIIth's jester.

To the east of the New Armoury is the Jewel-office, which is a dark, strong stone-room, in which the jewels of the crown are deposited. The jewels shewn at present are the following. The imperial crown, with which, it is pretended, all the kings of England have been crowned since Edward the Confessor, in 1042: it is of gold, enriched with diamonds, rubies, emeralds, pearls, and sapphires. The golden orb, or globe put into the king's right hand before he is crowned: this

this is about six inches in diameter, edged with pearls, and enriched with precious stones; having on the top an amethyst of a violet colour, and near an inch and an half high, set with a rich cross of gold, adorned with diamonds and other jewels: the whole height of the ball is eleven inches. The golden sceptre, with its cross, set upon a large amethyst of great value: the top rises into a fleur de lis of six leaves, all enriched with precious stones, fixed upon a mound or ball formed of the amethyst, already mentioned. The sceptre, with a dove, the emblem of peace, perched on the top of a small Jerusalem cross, finely ornamented with table-diamonds, and jewels of great value. St. Edward's staff, four feet seven inches and a half in length, and three inches three quarters in circumference, all of beaten gold, which is carried before the king at his coronation. The rich crown of state worn by his majesty in parliament, in which is a large emerald, seven inches round; a pearl, esteemed the finest in the world; and a ruby of inestimable value. The crown belonging to the prince of Wales, which, when the prince is of age to sit in parliament, is carried, together with the king's crown, as often as his majesty goes to the parliament-house, by the keeper of the jewel-office, attended by the wardens, privately in a hackney-coach, to Whitehall, where both crowns are delivered to the officer appointed to receive them, who, with some yeomen of the guard, carry them to the robing-rooms adjoining to the House of Lords, where his majesty and the prince of Wales put on their robes. The king wears his crown on his head while he sits upon the throne, but that of the prince of Wales is placed before him. As soon as the king is disrobed, the two crowns are carried back to the

Tower

Tower, by the perſons who brought them from thence, and again locked up in the jewel-office. The late queen Mary's crown, globe, and ſceptre, with the diadem ſhe wore at her coronation with her conſort king William. An ivory ſceptre, with a dove on the top, made for king James II's queen, whoſe garniture is gold, and the dove on the top gold, enamelled with white. The curtana, or ſword of mercy, the blade of which is thirty-two inches long, and near two broad, without a point, carried before the king at his coronation, between the two ſwords of juſtice. The golden ſpurs, and the armillas, being bracelets for the wriſts, which, though very antique, are worn at the coronation. The ampulla, or eagle of gold, which is finely engraved, and holds the holy oil the kings and queens of England are anointed with; and the golden ſpoon, that the biſhops pour the oil into. The eagle and ſpoon are two pieces of great antiquity; the eagle, including the pedeſtal, is about nine inches, and the wings expand about ſeven inches; the head of the eagle ſcrews off about the middle of the neck, which is made hollow for holding the holy oil; and when the king is anointed, the oil is poured into the ſpoon out of the bird's bill. A rich ſalt-ſeller of ſtate, in the form of the White-Tower, with the workmanſhip extremely fine; it is of gold, and only uſed on the king's table at the coronation. A ſilver font double gilt, and elegantly wrought, in which the royal family are chriſtened. A large ſilver fountain curiouſly wrought, preſented by the town of Plymouth to king Charles II. Beſides theſe, which are commonly ſhewn, there are here all the jewels worn by the princes and princeſſes at coronations, and a great quantity of curious old plate.

THE

THE next ſtructure we ſhall mention is the monument, erected to perpetuate the remembrance of the burning and rebuilding of the city. This dreadful fire happened in September 1666; and this ſtately column, which is of the Doric order, was begun by Sir Chriſtopher Wren in the year 1671, and compleated by that great architect in 1677. It greatly exceeds in heighth the pillars at Rome of the emperors Trajan and Antoninus, the ſtately remains of Roman magnificence, or that of Theodoſius at Conſtantinople; for the largeſt of the Roman columns, which is that of Antoninus, was only 172 feet and a half in heighth, and twelve feet three inches in diameter; but the heighth of this column is 120 feet, the heighth of the pedeſtal is forty, and the cippus, with the urn on the top, forty-two, making in the whole 202 feet; and the diameter of the column at the baſe is fifteen feet. It is fluted on the outſide, and at the corners of the pedeſtal are four dragons, the ſupporters of the arms of the city, and between them trophies, with ſymbols of regality, arts, ſciences, commerce, &c.

THE weſt ſide of the pedeſtal is adorned with beautiful emblems, by that ingenious ſtatuary, Mr. Cibber, the father of the late poet laureat, in which the eleven principal figures are done in alto, and the reſt in baſſo relievo. The figure, to which the eye is particularly directed, is a female, repreſenting the city of London, ſitting in a languiſhing poſture on a heap of ruins; her hair is diſhevelled, her head droops, and her hand, with an air of languor, lies careleſsly on her ſword. Behind is Time gradually raiſing her up: by her ſide a woman, repreſenting Providence, gently touches her with one hand, and, with a winged ſceptre in the other, directs her to regard two goddeſſes

goddeſſes in the clouds, one with a palm-branch, the emblem of Peace, the other with a cornucopia, denoting Plenty. At her feet is a bee-hive, to ſhew, that the greateſt misfortunes may be remedied by induſtry and application. Behind Time are citizens exulting in his endeavours to reſtore her; and beneath, in the midſt of the ruins, is a dragon, the ſupporter of the city arms, who endeavours to preſerve them with his paw. Still farther, on the north ſide, is a view of the city in flames, with the inhabitants in conſternation. On an elevated pavement at the other ſide, ſtands king Charles II. in a Roman habit, with his head encircled with a wreath of laurel, ſeeming to command three of his attendants to deſcend to her relief; the firſt repreſenting the Sciences holding Nature in her hands; the ſecond is Architecture, with a plan in one hand, and a ſquare and compaſſes in the other; and the third Liberty. Behind the king ſtands the duke of York, with a garland in one hand, to crown the riſing city; and a ſword in the other, for her defence. Behind him are Juſtice with a coronet, and Fortitude with a reined lion. Under the pavement, Envy appears peeping from her cell, and gnawing a heart; and in the upper part of the back ground, is repreſented the rebuilding of the city, by ſcaffolds erected by the ſides of unfiniſhed houſes, with builders and labourers at work upon them. Each of the other ſides of the pedeſtal has a Latin inſcription.

WITHIN is a winding ſtair-caſe of black marble, containing 345 ſteps, ten inches and a half broad, and ſix inches in thickneſs, by which is an aſcent to an iron balcony over the capital, encompaſſing a cone thirty-two feet high, which ſupports a blazing urn of braſs gilt.

AT

AT a little distance from the Monument is the famous stone bridge over the Thames to the borough of Southwark, known by the name of London Bridge, and was long remarkable for the lofty houses and shops built on each side of it, which gave it so much the appearance of a street, that a stranger scarce knew he was crossing the river, till he discovered it by two openings near the middle. It was erected in the room of a wooden bridge, and finished in the reign of king John, it having been thirty-three years in building, at the public expence. It consisted of twenty arches, was 915 feet long, forty-four feet high, and seventy-three feet wide; but the street between the houses was only twenty-three feet wide. The narrowness of this passage having occasioned the loss of many lives, from the number of carriages passing and repassing; likewise the enormous size of the sterlings, which took up one-fourth part of the water-way, and rendered the fall at low water no less than five feet, having also occasioned frequent and fatal accidents, the city of London, in 1756, obtained an act of parliament for improving and widening the passage over and through this bridge. This act was afterwards explained and improved by another; in consequence of both which, this bridge has now a passage of thirty-one feet for carriages, with a handsome raised pavement of stone, seven feet broad on each side, for the use of foot-passengers; the sides are secured and adorned by fine stone balustrades, enlightened in the night with lamps. The passage through the bridge is enlarged, by throwing two middle arches into one, and by other improvements. Under some of the arches, at the north end of the bridge, are machines worked by the tide and ebb

of

of the river, by which the water is raiſed to ſuch a height, as to ſupply many parts of the city.

WESTMINSTER-BRIDGE is univerſally allowed to be one of the fineſt in the world. The firſt ſtone of this noble ſtructure was laid on the 29th of January 1738-9, by the late earl of Pembroke, and was finiſhed and opened on the 17th of November 1750. It is adorned and ſecured on each ſide by a very lofty and noble baluſtrade. Over every pier is a receſs on each ſide, forming a ſemioctagon, and twelve of theſe are covered with half domes, four at each end, and four in the middle. Between theſe in the middle are pedeſtals, on which was intended a group of figures, and the whole is lighted in the night by a great number of lamps beautifully diſpoſed.

THIS magnificent ſtructure is 1223 feet in length, and is above three hundred feet longer than London Bridge. The room allowed for paſſengers conſiſts of a commodious foot-way; ſeven feet broad on each ſide, paved with broad moor-ſtone, and the intermediate ſpace is thirty feet wide, and is ſufficient to admit the paſſage of three carriages and two horſes a-breaſt. The bridge conſiſts of thirteen large and two ſmall arches, with fourteen intermediate piers. The arches are all ſemicircular, and ſpring from about two feet above low-water mark; the center arch is ſeventy-ſix feet wide, and the reſt decreaſe in width equally on each ſide, by four feet; and the free courſe for the water under the arches is 870 feet, ſo that there is no ſenſible fall of water. The foundation is laid on a firm and ſolid maſs of gravel, which lies at the bottom of the bed of the river, but at a much greater depth on the Surry, than on the Weſtminſter ſide; and this inequality of the ground required the length of the ſeveral

piers

piers to be very different, as some have their foundations laid at five, and others at fourteen feet under the bed of the river The piers are all four feet wider at their foundation than at the top, and are founded on the bottoms of the wooden cases in which they were built. All the piers consist of solid blocks of Portland stone, many of which are four or five tons weight, and none less than a ton, except the closers, or smaller stones intended for fastening the rest, one of which is placed between every four of the larger blocks.

BLACK-FRIARS BRIDGE will, when finished, be no less magnificent, and will have the advantage of much wider arches, and of appearing of a lighter structure. The first stone of the north abutment was laid on the first of November 1760, by Sir Thomas Chitty, then lord mayor, attended by several aldermen and commoners of the committee, by his striking the stone with a mallet, and the officers laying upon it, at the same time, the city sword and mace. Several pieces of gold, silver, and copper coins of king George II. were placed under the stone, together with a Latin inscription. It is built of Portland stone. The arches, which are only nine in number, are elliptical, and the centre arch a hundred feet wide, those on the sides decreasing in width in a regular gradation, and the arch next the abutment, at the ends, is each seventy feet wide. It will have an open balustrade at the top, and pavilions on the piers, to serve as watch-boxes; and, when finished, there will be a foot-way on each side, with room for three carriages a-breast in the middle. The centre arch is exceeded by very few in the whole world for bigness, and is considerably larger than that of the Rialto at Venice.

ONE

ONE of the moſt celebrated buildings in London is the Royal Exchange, where the merchants of this great metropolis meet every day at noon, this being eſteemed one of the fineſt and ſtrongeſt ſtructures of the kind in Europe. It was originally built of brick, in the year 1567, at the expence of Sir Thomas Greſham, a merchant of this city; and in 1570, was ſolemnly proclaimed The Royal Exchange by a herald, with ſound of trumpet, at the command, and in the preſence of queen Elizabeth. That ſtructure being deſtroyed by the fire of London in 1666, it was rebuilt of Portland ſtone, and ruſtic-work, in the magnificent manner it now appears, at the expence of 80,000l. King Charles II. laid the firſt ſtone in the year 1667, and it was finiſhed in 1669. The whole is a parallelogram 203 feet in length, and 171 in breadth, incloſing an area 144 feet long, and 117 broad. This area is ſurrounded with piazzas, forming ambulatories for the merchants to ſhelter themſelves from the weather. The middle part is paved with fine pebbles, and the ambulatories with black and white marble. In the centre of this area ſtands upon a marble pedeſtal, about eight feet high, a fine ſtatue of king Charles II. in a Roman habit, executed by Mr. Gibbon, and incloſed with iron rails. Under the piazzas are 28 niches, all vacant, except two, one in the north-weſt corner, in which is a ſtatue of Sir Thomas Greſham, the original founder; and the other at the ſouth-weſt, in which is a ſtatue of Sir John Barnerd, who had been twice lord mayor of the city, and many years one of its repreſentatives in parliament. Above the arches of theſe piazzas is an entablature, with curious enrichments; and from the cornice riſes a range of pilaſters, with an entablature extending round, and a compaſs pediment

pediment in the middle of the cornice of each of the four ſides. Under that, on the north, are the king's arms; on the ſouth, thoſe of the city; on the eaſt, thoſe of Sir Thomas Greſham; and on the weſt, the arms of the company of mercers, with their reſpective enrichments. In the intercolumns are 24 niches, 20 of which are filled with the ſtatues of the kings and queens of England ſtanding erect, dreſſed in their robes, and with their regalia, except the ſtatues of king Charles II. king James II. and George II. and III. which are habited like the Roman emperors.

In each of the two principal fronts, next the ſtreets, on the ſouth and north ſides, is a piazza, and in the middle of each is an entrance into the area, under a magnificent arch. On each ſide of the ſouth entrance is a niche, one containing a ſtatue of king Charles I. and the other one of king Charles II. both dreſſed in Roman habits, and well executed. On each ſide of this entrance is a range of windows, placed between demi-columns, and pilaſters of the Compoſite order, above which runs a baluſtrade. The heighth of the building is 66 feet, and from the centre of this ſide riſes a lanthorn 178 feet high, on the top of which is a fane of poliſhed braſs, in the form of a graſhopper, that animal being the creſt of Sir Thomas Greſham's arms. The north front of the Royal Exchange is adorned with pilaſters of the Compoſite order, but has neither columns nor ſtatues on the outſide; and inſtead of the two compaſs pediments, has a triangular one.

Near the north front of the Royal Exchange is the Bank of England, which is a ſuperb ſtructure, built with Portland-ſtone, and, when finiſhed,

niſhed will be the moſt magnificent edifice of the kind in Europe.

To the ſouth-weſt of the Royal Exchange is the Manſion-houſe of the Lord Mayor, a noble edifice, erected in the place where Stock's Market was formerly held. The firſt ſtone of this ſtructure was laid in October, 1739, and the work was not finiſhed till the year 1753. It is built of Portland ſtone, and has a portico of ſix lofty fluted columns, of the Corinthian order, in the front; the ſame order being continued in pilaſters, both under the pediment, and on each ſide. The baſement ſtory is very maſſy, and built in ruſtic, having in the centre the door which leads to the kitchen, cellars, and other offices; and on each ſide riſes a flight of ſteps, of very conſiderable extent, leading up to the portico, in the middle of which is the door which leads to the apartments and offices, where buſineſs is tranſacted. The ſtone baluſtrade of the ſtairs is continued along the front of the portico, and the columns ſupport a very large, angular pediment, adorned with a very noble piece in baſs relief by Mr. Taylor, repreſenting the dignity and opulence of the city of London. In the centre ſtands a graceful woman crowned with turrets, repreſenting the city, her left foot placed upon the figure of Envy, who lies on her back, and ſeems endeavouring to riſe. In her right hand ſhe holds a wand, and her left arm reſts upon a large ſhield, which has the city arms. This being the principal figure, it is done in alto relievo, ſhe ſeems ready to ſtep forwards, her head and right arm, which are compleatly finiſhed, project from the back ground, and her wand extends beyond the cornice of the pediment. Near her, on her right ſide, ſtands a Cupid holding the Cap of Liberty over his ſhoulder, at the end

of a ſhort ſtaff, in the manner of a mace; and a little farther, a river God, repreſenting the Thames, lies reclined, pouring a ſtream of water from a large vaſe; and near him is an anchor faſtened to its cable, with ſhells lying on the ſhore. On the left hand of London is Plenty, kneeling and holding out her hand in a ſupplicating poſture, as if beſeeching her to accept of the fruits ſhe is pouring from her cornucopia; and behind her are two naked boys, with bales of goods, as emblems of Commerce. Beneath this portico are two ſeries of windows, and above them an attic ſtory, with ſquare windows, crowned with a baluſtrade.

THE building is an oblong; it has an area in the middle, and at the fartheſt end is an Egyptian hall, which is the length of the front, very high, and deſigned for public entertainments. To make it regular in flank, the architect has raiſed a ſimilar building on the front, which is the upper part of a Dancing-gallery. The apartments are extremely noble; but this edifice being too cloſely ſurrounded with houſes, the rooms are dark, and the front itſelf cannot be viewed to proper advantage.

AMONG the public ſtructures of this metropolis, the Britiſh Muſeum in Great Ruſſel-Street, Bloomſbury, merits particular attention, not ſo much for its being a large and magnificent building, as for its containing the nobleſt collection of curioſities in the world. Sir Hans Sloane, Bart. who died in January, 1753, may be juſtly eſteemed the founder of this grand Muſeum, he leaving by will his large library, and numerous curioſities, which coſt him 50,000l. to the uſe of the public, on condition the parliament would pay 20,000l. to his executors. The parliament readily agreed to this noble propoſal, and paſſed

an

an act for raising 300,000 l. by lottery; two-thirds of which was divided among the adventurers, and from the remaining hundred thousand pounds, 20,000 l. was paid to Sir Hans Sloane's executors, 10,000 l. was given for lord Oxford's manuscripts; 30,000 l. was vested in the funds for supplying salaries for officers, and other necessary expences; 10,000 l. was given for Montague-house, and 15,000 l. was employed in repairs, and fitting it up for the reception of this superb collection of curiosities. After which his late majesty was graciously pleased to add to it the royal libraries of books and manuscripts collected by the kings of England; and the late Major Edwards left it a fine collection of books, with 7000 l. in reversion, for purchasing manuscripts, books, medals, and other curiosities.

THE Sloanian collection consists of an amazing number of curiosities. The library, including books of drawings, manuscripts, and prints, amounts to about fifty thousand volumes. The medals and coins, ancient and modern, to 23,00: the antiquities to 1125: the vessels, &c. of agate, jasper, &c. to 545: the precious stones to 2256: the cameos and intaglios to about 700: the metals, minerals, ores, &c. to 2725: the crystals, spars, &c. to 1864: the corals, and spunges, to 1421: the bitumens, sulphurs, ambers, &c. to 399: the shells, &c. to 5843: the birds and their parts, eggs, and nests, of different species, to 1172: the quadrupeds, &c. to 1886: the insects, &c. to 5439; and the vegetables to 12506. Besides, there are a great number of other articles; so that the written catalogues of the whole fill thirty-eight volumes in folio.

THE building is now admirably contrived for holding this noble collection, and the disposition

of it in the ſeveral rooms is not only orderly and well deſigned; but the whole may be viewed without expence. For which purpoſe gentlemen and ladies give in their names, with their addition and place of abode, at the porter's lodge, on which they have notice given them what day and hour to attend, and tickets given them, by ſhewing which they are admitted.

IN the hall are ſeveral blocks or columns of that ſurpriſing natural curioſity, the giants cauſeway in Ireland. A ſtone brought from the Appian road, which leads from Rome to Brunduſium; ſeveral fragments of granite columns; a large piece of that ſort of marble called ophites, from its reſemblance to a ſerpent's ſkin; a large piece of the lava, which in the eruptions of Mount Veſuvius, as will be hereafter mentioned, iſſues like a burning river; but as it cools hardens into a kind of ſtone that takes a fine poliſh: ſeveral ancient monuments of ſtone, with inſcriptions in Latin, Greek, and other languages; two antique heads of Termini, uſed as landmarks by the Romans; a fine ſkeleton of a ſea unicorn, with ſeveral others.

FROM the hall you aſcend a magnificent ſtaircaſe finely painted by La Foſſe. The ſubject of the cieling is Phaeton entreating Apollo to permit him to drive his chariot for a day, and on the walls is a landſkip by Rouſſeau. This leads into a veſtibule, the cieling of which repreſents the fall of Phaeton; and here is a mummy with ſome other antiquities. The ſaloon is a magnificent room, the cieling and ſide-walls of which are painted by La Foſſe; the landſkips by Rouſſeau, and the flowers by the celebrated Baptiſt.

FROM thence you enter the room that contains the Cottonian and royal manuſcrips in about

about 750 volumes. The next room contains the Harleian manuſcripts, conſiſting of about 7620 volumes: then turning to the right, you enter a room, which contains the royal charters, which are about 16,000 in number. Contiguous to this is the room of medals, which amount to upwards of 22,000. The next room contains Sir Hans Sloane's manuſcripts; and adjoining to it is a room that contains the antiquities, and opens into the veſtibule.

Now entering the veſtibule, and paſſing through the ſaloon, you enter a room that contains the minerals: the next has the collection of ſhells, and a third the collection of vegetables and inſects. Then turning again to the left, the next room contains animals in ſpirits, and contiguous to that is the room of artificial curioſities.

Now deſcending a ſmall ſtair-caſe, and paſſing through a room in which is a magnetic apparatus given by Dr. Knight, you are conducted through two rooms, which contain the royal libraries, and afterwards through ſix rooms, containing the library of Sir Hans Sloane. From thence you enter the withdrawing room of the truſtees; then into Major Edwards's library; and laſtly, you enter a room that contains a part of the king's library, which laſt, in the whole conſiſts of about 12,000 volumes.

WE ſhall conclude our account of the buildings of this kingdom with a deſcription of the two celebrated hoſpitals of Greenwich and Chelſea.

GREENWICH Hoſpital, in the town of that name, is ſuch a ſpacious and ſuperb edifice, of ſuch noble ſymetry, architecture and decorations, in ſuch a delightful ſituation, and ſo amply endowed, that it is ſcarce equalled by any

foundation upon earth; and yet, when we conſider the vaſt expence that has been laid out upon ornament in a work ſolely appropriated to humanity, one can ſcarce help wiſhing, that many of its beauties had been ſpared, in order to increaſe the number of thoſe who are to receive the benefit of this magnificent foundation. It ſtands upon the ſouth bank of the Thames, on the ſpot where formerly was a palace erected by Humphrey duke of Glouceſter, who called it Placentia. The palace was enlarged by Henry VII. and compleated by Henry VIII. who was ſo charmed with its ſituation, that he frequently reſided here: but it being afterwards neglected, king Charles II. pulled it down, and began another, the weſt wing of which he lived to ſee finiſhed. This wing, together with nine acres of ground, belonging to it, king William appropriated for a royal hoſpital for aged and diſabled ſeamen, with the widows and children of ſuch of them as loſt their lives in the ſervice of the crown, and for the encouragement of navigation. The other wing was begun in the reign of king William III. carried on in the reigns of queen Anne and king George I. and finiſhed in the reign of king George II.

THE front to the Thames conſiſts of two ranges of ſtone buildings, with the governor's houſe at the back part, in the centre. Theſe buildings, between which is a large area, exactly correſpond with each other; and each range is terminated by a very noble dome. In each front to the Thames, two ranges of coupled Corinthian columns ſupport their pediments; and the ſame order is continued in pilaſters along the building. The projection of the entablatures gives an agreeable diverſity of light and ſhade.

In

In the centre of each part is the door, which is of the Doric order, adorned above with a tablet and pediment. Within the height of the lofty Corinthian columns on each ſide, are two ſeries of windows, enlightening two floors: the undermoſt, which are the ſmalleſt, have ruſtic caſes, while the upper ſeries are adorned with the orders, and with upright pointed pediments. Over theſe is an attic ſtory, where pilaſters of the Corinthian order riſe over every column and pilaſter of the ſame order below, between which the windows are regularly diſpoſed, and the top crowned with a handſome baluſtrade.

THIS is the front facing the Thames. That which is continued from them, and on each ſide faces the area, correſponds with it, tho' in a finer and more elegant manner. In the centre of both, is a range of Corinthian columns ſupporting a pediment; and towards each corner, a range of Corinthian pilaſters. The front is ruſticated, and there are two ſeries of windows. The domes at the end, which are 120 feet high, are ſupported on coupled columns, as well as the porticos below; and under one of theſe is the chapel, which is adorned on the inſide with the greateſt elegance and beauty. In the centre of the area is a ſtatue of his late majeſty king George II.

THE hall is finely painted by Sir James Thornhill, particularly the cieling and upper end: on the latter are repreſented in an alcove, the late princeſs Sophia, king George I. king George II. queen Caroline, the queen dowager of Pruſſia, Frederick, prince of Wales, the duke of Cumberland, and the five princeſſes, his late majeſty's daughters. On the cieling, over the alcove, are her late majeſty queen Anne, and prince

George of Denmark; and on the cieling of the hall are king William and queen Mary, with several fine emblematical figures. All the strangers who see this hall, pay two-pence each, and this income is applied to the support of the Mathematical School, for the sons of sailors.

FOR the better support of this hospital, every seaman, both in the royal navy, and in the merchants service, pays six-pence a month. King William gave 2000 l. a year towards finishing the buildings. The several benefactions to this noble charity, amount to 58,209 l. and in 1732, the late earl of Derwentwater's forfeited estate, amounting to near 6000 l. a year, was given to it by parliament. The profits arising from the market at Greenwich, are likewise appropriated to the same use; and as occasions require, money is granted by parliament for the support of the hospital.

IN 1705 was the first admission of 100 disabled seamen; but the number is now increased to about 3000 men, and 100 boys. To every hundred pensioners are allowed five nurses, who are the widows of seamen, at 10 l. a year; and two shillings a week more to those who attend in the Infirmary. The pensioners are cloathed in blue, with brass buttons; and are also allowed hats, linen, stockings, and shoes: besides their commons, they have one shilling a week to spend; and the common warrant-officers one shilling and six-pence. The hospital has a governor, a lieutenant-governor, a treasurer, and other officers.

BEHIND the hospital is a delightful park, well stocked with deer, that has a fine prospect, both of the city of London, and of the river Thames. On the top of a steep hill in the park, is a Royal Observatory, erected by Charles II. furnished with

with all ſorts of mathematical inſtruments for aſtronomical obſervations, and a deep well for obſerving the ſtars in the day-time, under the direction of an aſtronomer royal.

As Greenwich Hoſpital is appropriated for the ſupport of aged and diſabled ſeamen, there is another Royal Hoſpital at Chelſea, about two miles ſouth-weſt of London, for the Invalids, in the land-ſervice. This hoſpital was originally a college, founded by Dr. Sutkliff, dean of Exeter, in the reign of king James I. for the ſtudy of Polemic Divinity. The king gave many of the materials, as well as a large ſum of money; but the ſum ſettled by Dr. Sutkliff upon the foundation, being far unequal to the end propoſed, the reſt was left to private contributions; and theſe coming in ſlowly, the work was ſuſpended, and ſoon fell to ruin. At length, the ground coming to the crown, king Charles II. began the preſent hoſpital, which was carried on by James II. and compleated by William and Mary. It was built by Sir Chriſtopher Wren; and tho' leſs magnificent than Greenwich Hoſpital, is one of the neateſt and moſt elegant ſtructures of the kind in Europe. The principal building conſiſts of a large quadrangle, open to the Thames. The front has a noble gate-way leading thro' it, on one ſide of which is a chapel, on the other a hall where the penſioners dine in common, and between is a noble pavilion, with a fine gallery facing the river, ſupported by ſtone pillars. The two ſides, or wings, which are four ſtories high, are divided into wards, two in every ſtoryt each containing twenty-ſix diſtinct apartments. At each of the four corners is a pavilion, one for the governor's lodging and the council-chamber; and the other three are appropriated for offices.

In the middle of this area, is a fine ſtatue in braſs, of king Charles II. Beſides the principal building, there are two other large ſquares, which conſiſt of apartments for the officers and ſervants of the houſe, for old maimed officers of horſe and foot; and of an Infirmary for the ſick, with other conveniencies.

THE expence of erecting this ſtructure, which is of brick and ſtone, is computed at 150,000 l. and the extent of the ground is above 40 acres. This building is particularly remarkable for its great regularity, and the proper ſubordination of its parts, together with ſuch a diſpoſition of them as is beſt ſuited to the purpoſes of the charity, the reception of a great number, and the providing them with every thing that can contribute to their convenience and pleaſure. Theſe penſioners conſiſt of ſuperannuated veterans, who have been at leaſt twenty years in the army, or thoſe ſoldiers who are diſabled in the ſervice of the crown. They wear red coats, lined with blue; and are provided with all other cloaths, diet, waſhing and lodging. Thirty-ſix officers are allowed ſix-pence a day; thirty-four light horſemen, and thirty-ſerjeants, have two ſhillings a week each; forty-eight corporals and drums have tenpence per week; and the private men, who amount to about 400, are each allowed eightpence a week, pocket-money. As the houſe is called a garriſon, all the members of it are obliged to do duty in their reſpective turns, and they have prayers twice a day in the chapel. Beſides theſe, there are upwards of 12,000 outpenſioners, who are allowed 7l. 12s. 6d. a year each. Theſe great expences are ſupported by a poundage, deducted out of the pay of the army, with one day's pay, once a year from each officer and

and common ſoldier; and when there is any deficiency, is ſupplied by a ſum granted by parliament.

HAVING ſaid enough, or perhaps too much upon this head, it remains that we give ſome account of thoſe arts, manufactures, &c. of the Britiſh nation for which they are moſt famous, and which are the chief ſource of their power and riches.

ARTS, MANUFACTURES, and FISHERIES.

THE Woollen Manufacture, which includes all the ſorts of commodities into which wool is wrought, now makes the principal article both in our foreign and domeſtic trade, and therefore deſervedly comes firſt under our conſideration. The wools of England have always been in the higheſt repute, the beſt of which are thoſe of Leominſter, Cotſwold, Lincolnſhire, and the Iſle of Wight; and though the Scotch and Iriſh wools are commonly ſold abroad for Engliſh, yet they are far ſhort of it in fineneſs*. Even the Spaniſh

* The fineneſs and plenty of our wool is owing in ſome meaſure to the ſweet ſhort graſs in many of our paſtures and Downs; and the advantage of our ſheep feeding on this graſs all the year, without being ſhut up in folds during the winter, or to ſecure them from wolves at other times, contributes not a little to the ſoftneſs of their fleeces. M. Colbert, to whom the French manufactures and commerce are very much indebted, had thoughts of procuring ſome Engliſh ſheep, and propagating them in France, by chuſing them (as near as poſſible) ſuch paſtures and ſuch a ſky as they had in their own iſland; ſo that the French might be no longer obliged to depend precarioufly on the clandeſtine ſupplies of wool from England: But the count de Cominges, then ambaſſador of France at the Engliſh court, laid the impoſſibility of getting ſuch an export of ſheep, and of making them multiply in France, ſo ſtrongly before him, that he abandoned the deſign.

wool, which bears a great price among us, owes its goodneſs to a few Engliſh ſheep ſent over into Spain as a preſent by one of our kings. Anciently the principal commerce of this nation conſiſted in wool unmanufactured, which was bought of us by foreigners; inſomuch that the Cuſtoms of Engliſh wool exported, in the reign of Edward the Third, amounted, at fifty ſhillings a pack, to 250,000l. per annum, which in thoſe days was a prodigious ſum. When our wool was ſold in the fleece, our chief cuſtomers were the Flemings and Brabanters, particularly the merchants of Ghent and Louvain, who took off vaſt quantities, to ſupply two manufactories that had flouriſhed in thoſe cities from the tenth century, and furniſhed the greateſt part of Europe with woollen cloths, &c. But the inhabitants of Ghent having divers times revolted againſt their ſovereigns, on account of certain taxes which they refuſed to pay, the ſeditious were at length puniſhed and diſperſed, part of them retiring to Holland, and the reſt to Louvain. Theſe laſt, together with their art, carrying with them their ſpirit of ſedition, it was not long before ſeveral of them, for murdering ſome of the magiſtrates, were obliged to fly into England, where they inſtructed our people how to manufacture their own wool; in which they ſucceeded ſo well, and were ſo ſenſible of the advantages ariſing from it, that our parliaments have ſince that time uſed their utmoſt endeavours to prevent the exportation of wool; though all the laws hitherto made for that purpoſe have not put an effectual ſtop to that pernicious practice. This eſtabliſhment of the woollen manufactures in England was about the year 1420; though M. de Thou places it in the reign of queen Elizabeth, when the troubles about

about religion, and the ſeverity of the duke of Alva, drove great numbers of weavers and other artiſts out of the Low Countries into this kingdom. But what that excellent hiſtorian ſays upon this head, is rather to be underſtood of their perfection than their firſt eſtabliſhment, and of the ſeveral great manufactures then ſet up at Norwich, Colcheſter, and other places; for hiſtory makes mention of thoſe of London long before any part of the Seventeen Provinces had attempted to throw off the Spaniſh yoke. How valuable the woollen manufacture is to this nation appears from a computation of Dr. Davenant, (and we hope it is ſince improved) who reckons the produce thereof to be eight millions per annum, three fourths of which are conſumed at home, and the reſt exported.

As to the art of Weaving, which is now brought to ſuch great perfection amongſt us in all its various branches, it is undoubtedly very ancient. The looms uſed by weavers are of various ſtructures, accommodated to the different materials to be wove, and to the different manner of weaving them. As many of them are exceedingly complex, it is ſcarce poſſible to give the reader a juſt idea of them by a verbal deſcription, which therefore we ſhall not attempt. But perhaps there is no kind of loom of a more curious ſtructure than that for weaving ſtockings, which is a modern invention, the honour whereof has been greatly conteſted between the French and Engliſh. The truth however, ſetting aſide all national prejudices, ſeems to be, that this uſeful and ſurpriſing machine was firſt invented by a Frenchman, who, finding ſome difficulty to procure an excluſive privilege to ſettle himſelf at Paris, came over to England, where he was encouraged according to his

his merit. Having imparted his invention to the Engliſh, they became ſo jealous of it, that it was forbid, under pain of death, to carry any of the machines out of the iſland, or to communicate a model of them to foreigners: but as we firſt received it from a Frenchman, ſo a Frenchman firſt carried it abroad, and, by a wonderful ſtrength of memory and imagination, made a loom at Paris, on the idea he had formed thereof by viewing it in England. This loom was ſet up in the year 1656, and has ſerved for the model of all thoſe ſince erected in France, Holland, and other parts of Europe.

THE mention of theſe curious machines puts us in mind of one of an extraordinary nature, viz. the famous engine for making thrown ſilk at Derby, the model of which Sir Thomas Lombe brought from Italy, and at a great expence erected on the river Derwent. This engine contains 26,586 wheels, and 97,746 movements, to all which one water-wheel gives motion; and every time this wheel goes round, no leſs than 73,726 yards of ſilk-thread are twiſted, amounting to 318,504,960 yards in twenty-four hours. One fire-engine conveys warm air to every part of the machine, and the whole work is governed by one regulator.—In the fifth of king George I. a patent paſſed to ſecure to Sir Thomas Lombe the ſole property of this invention for fourteen years: but the undertaking being very expenſive, and the ſaid term being near elapſed without any great benefit ariſing to the proprietor, Sir Thomas applied to parliament, who, to preſerve the art from being loſt, granted him 14,000l. on condition, that an exact model ſhould be taken of this wonderful piece of machinery; which was done accordingly, and may be ſeen in the Tower of London.

London. After the death of Sir Thomas, this engine was ſold, and others have been erected in imitation of it.

As the Engliſh have long been famous for their ſkill in navigation, as well as for their naval power, it ſeems proper to ſay ſomething upon this ſubject. The invention of ſhips is very ancient, and at the ſame time very uncertain; ſome aſcribing it to Dædalus, whoſe wings (ſay they) which he invented to eſcape from the labyrinth of Crete, were nothing but ſails, which he added to his veſſel, and thereby eluded the purſuit of Minos. Others chuſe to refer the origin of ſo uſeful an invention to God himſelf, who gave the firſt ſpecimen thereof in the ark built by Noah under his direction. Hiſtory however repreſents the Tyrians as the firſt navigators, who being furniſhed from Lebanon and other adjacent mountains with excellent wood for ſhip-building, ſoon became maſters of a numerous fleet, by which they arrived to an incredible pitch of power and riches: and it is from the ſame ſource, I mean that of navigation and commerce, that England derives its opulence and ſtrength, and is become the envy of its neighbours on the Continent.—To give the reader an idea of the ſeveral parts and members of a ſhip, both internal and external, would be impoſſible without draughts thereof, and explanations annexed; but he may form a notion of the ſurprizing bulk of ſome of theſe floating ſtructures, by the dimenſions of one of the largeſt that the modern ages have produced *, I mean

* We read of ſome ſhips built by the ancients (which indeed were more for ſhew than uſe) whoſe magnitude far exceeded the largeſt of the preſent times. That of Ptolemy Philopater was 280 cubits long, 38 broad, and 48 high; carrying 400 rowers, the ſame number of ſailors, and 3000 ſoldiers.

mean one of our firſt-rate men of war, which is 210 feet in length, draws 22 feet water, carries 110 guns and 1250 men, has an anchor weighing above four tons, a cable 200 yards long, and 22 inches in diameter.

THE art of navigation was not brought to perfection till after the invention of the Mariner's Compaſs, the honour of which is claimed by ſeveral nations. This is an inſtrument by which pilots direct the courſe of their ſhips, conſiſting of a box, including a magnetical needle that always points nearly to the north. In the middle of the box is fixed a perpendicular pivot, which ſuſtains a card or paſt-board, on whoſe upper ſurface are deſcribed ſeveral con-centric circles, the outermoſt whereof is divided into 360 degrees, and the other into 32 points anſwering to ſo many winds, for which the ſeamen have different names. In the centre of this card is a braſs cone or cap, a little concave, which is fitted to the middle of the needle, and plays freely on the pivot. It is covered with a glaſs, and the whole is incloſed in another box, where it is ſuſpended in ſuch a manner as to keep the needle horizontal. The needle is made of a thin plate of ſteel, in the form of a lozenge, (or what is vulgarly called a diamond) and being rubbed on a good loadſtone, acquires the above-mentioned property of turning towards

ſoldiers. But that which Hiero built, under the direction of Archimedes, is ſtill more extraordinary, having wood enough in it to make fifty galleys. It had all the variety of apartments contained in a palace, beſides galleries, gardens, baths, fiſh-ponds, mills, ſtables, &c. It was encompaſſed with an iron rampart, and had eight towers with walls and bulwarks furniſhed with machines of war, particularly one that threw a ſtone of three hundred weight, or a dart twelve cubits long, to the diſtance of half a mile.—See more in Athenæus, Lib. V.

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the north; the exceeding uſefulneſs of which in navigation is very eaſy to conceive.

THE power of the magnet or loadſtone to attract iron was known to the ancients, and is mentioned by Plato, Ariſtotle, and Pliny; but the knowledge of its directive power, whereby it diſpoſes its poles along the meridian of every place, and cauſes needles, pieces of iron, &c. touched with it to point nearly north and ſouth, is of a much later date; though the exact time of the diſcovery, and the perſon that made it, are yet unknown. Guyot de Provins, an old French poet, who lived in the twelfth century, ſeems plainly enough to hint at the uſe of the magnetic needle; and the French lay claim to the invention of the compaſs from the fleur-de-lis, with which all nations diſtinguiſh the north point upon the card. With equal reaſon Dr. Wallis aſcribes it to the Engliſh, from its name compaſs, whereby moſt nations call it, and which (he obſerves) is uſed in ſeveral parts of England to ſignify a circle: but if the Engliſh are not intitled to the honour of the diſcovery, they have at leaſt the merit of having brought it to perfection, by the method of ſuſpending the box which contains the needle. Some will have it, that Marco Paolo, a Venetian, having made a journey to China, brought back the invention with him in the year 1260; and what ſeems to confirm the conjecture is, that at firſt the Europeans uſed the compaſs in the ſame manner as the Chineſe ſtill do, i. e. they let it float on a piece of cork, inſtead of ſuſpending it on a pivot. There is ſome reaſon to think that our countryman, Roger Bacon *, either diſcovered, or at

* It appears that this famous friar underſtood how to make gunpowder above a hundred years before we have any account

at leaſt knew of, the directive quality of the loadſtone: but after all, Flavio Gioia is the perſon who is uſually ſuppoſed to have conſtructed the firſt mariner's compaſs, about the year 1300, at Melfi in the kingdom of Naples.

THE variation or declination of the magnetic needle from the true north point, either towards the eaſt or weſt, which is greater or leſs in different parts of the world, was firſt diſcovered in the year 1500 by Sebaſtian Cabot, a Venetian. The inclination or dipping of the needle, when hung ſo as to play vertically, to a point beneath the horizon, was the diſcovery of Mr. Robert Norman, an Engliſhman, about the year 1576. The variation of the variation, that is, a difference in the declination of the needle at different times in the ſame place, was firſt found out by another of our countrymen, Mr. Gellibrand, about the year 1634; though ſome aſcribe the diſcovery to Gaſſendus. It is very difficult to account for theſe ſurprizing phænomena; but thoſe who are deſirous of farther ſatisfaction with reſpect to the variations of the needle, we refer to the ingenious hypotheſis of the learned Dr. Halley, publiſhed in the Philoſophical Tranſactions.

BEFORE we take leave of our iſland, let us give a brief account of its principal fiſheries, which make a conſiderable branch of the Britiſh commerce. A great number of veſſels and ſeamen are employed therein; and beſides what is con-

account of its being uſed in the art of war; for he expreſsly mentions the compoſition in a Treatiſe de Nullitate Magiæ, publiſhed at Oxford in 1216. "You may raiſe thunder "and lightning (ſays he) at pleaſure, by only taking ſul- "phur, nitre, and charcoal, which being mixed together, "and confined in a cloſe place, cauſes a noiſe and exploſion "greater than that of thunder."

ſumed

ſumed at home, above 200,000l. ſterling is yearly returned in time of peace merely for herring and cod exported to Spain, Italy, and ſeveral parts of the Mediterranean. Notwithſtanding this, we are juſtly reproached with being too remiſs in this profitable article of trade, and letting our neighbours reap the advantage of thoſe bleſſings which nature ſeems to invite us to receive. The Dutch, Hamburghers, and others, come annually in ſwarms to our coaſts, where they take immenſe quantities of fiſh, and even ſell them to us afterwards for ready money. Scotland ſuffers incredibly by this neglect; for no country in Europe can rival it in the abundance of fine fiſh wherewith its ſeas and rivers are ſtored; and the Scottiſh iſlands, eſpecially thoſe on the weſtern ſide, lie very commodiouſly for carrying on the fiſhing-trade to perfection *.

WE ſhall ſay nothing of our Cod-fiſhery at home, it being inconſiderable compared with that of Newfoundland, which ſhall be ſpoken of in its proper place. The herring-fiſhery on the coaſts of Scotland, if purſued with that application it deſerves, would be of vaſt advantage to Great-Britain. The iſles of Shetland are particularly remarkable for the innumerable ſhoals of herrings that appear there in the ſummer-ſeaſon, inſomuch that the Dutch ſend thither annually two thouſand

* The eſtabliſhment of a fiſhery in theſe iſlands was firſt attempted by King Charles I. in conjunction with a company of merchants; but the unhappy civil war breaking out amongſt us, the deſign miſcarried. The next attempt was made by king Charles II. who alſo joined with ſome merchants, and for a time the undertaking ſucceeded well enough; but the king being in want of money withdrew what he had employed in the fiſhery, at which the merchants being diſguſted, did the like, and ſo the affair was ruined. — The herrings about the weſtern iſles are reckoned the beſt and fatteſt, tho' not ſo large as thoſe taken on the eaſtern and northern coaſts.

veſſels,

veſſels, and ſometimes more, which are employed in that fiſhery during the months of June, July, and Auguſt. Theſe veſſels are a kind of barks called Buſſes, from forty-five to ſixty tons, carrying two or three ſmall cannons. During this ſeaſon, the iſlanders enrich themſelves by ſelling ſeveral ſorts of Scots manufactures to the Dutch ſeamen, as well as proviſions; and alſo by taking great quantities of fiſh on their own accounts, which are purchaſed by the Dutch.

THE Hollanders firſt began a regular herring-fiſhery about the year 1164, and obſerved the ſeveral ſeaſons of their paſſage; for theſe fiſh make a yearly progreſs in vaſt multitudes from the North Sea down the Britiſh Channel, and return again at a certain time, obſerving a wonderful policy and exactneſs. They uſually go in ſhoals, and are fond of following fire or light; and in their paſſage reſemble a kind of lightning themſelves. But though the Dutch began their herring-fiſhery ſo early, the method of ſalting and barrelling them was not diſcovered till the latter end of the fourteenth or beginning of the fifteenth century *. The white or pickled herrings cured by the Dutch are in the greateſt repute, and next to them the Iriſh, particularly thoſe of Dublin, which are ſcarce inferior to the beſt herring of Enchuyſen or Rotterdam. The Scotch herring is not ſo well gutted, ſalted, or barrelled as the Dutch, and yet its taſte is excellent; nor is it

* Willoughby obſerves, that one Buckelſz, or Bachalen, a native of Bier Vliet, rendered his name immortal, by diſcovering the method of curing and pickling herrings; and adds, that the emperor Charles V. when he was in the Low-Countries, made a journey with the queen of Hungary to the iſle of Bier Vliet, on purpoſe to view a monument erected there to his memory.

doubted,

doubted, but that if the Scots were as careful in these circumstances as their neighbours, their herring would be the best in the world.

For red herrings the town of Great Yarmouth in Norfolk has long been famous *, and indeed has engrossed the whole herring-fishery on the east coast of England. The season for this fishery is in September; and it is said that fifty thousand barrels, (some say forty thousand lasts) containing no less than forty millions of herrings, are annually taken and cured here, great part of which are exported to Italy, Spain, and Portugal. When the fish are caught, they gut and lay them in brine for twenty-four hours; after which they hang them by the head on little wooden spits, in a kind of chimney made for that purpose, which will hold ten or twelve thousand at a time; where they remain till they are sufficiently smoaked and dried by a smothering fire of brush-wood, and are then taken down and barrelled up for keeping.

The Pilchard fishery on the coast of Cornwall and Devonshire, is so profitable an article to the inhabitants of those counties, that it deserves to be mentioned. This fish is bigger than the anchovy, but less than the herring, which in other respects it pretty much resembles. The season for catching the Pilchards is from June to September, at which time they appear in such prodigious shoals, that half a million have been taken at a draught. Many thousand barrels are yearly exported by the merchants; but our fish, though bigger, are not

* The author of the additions to Mr. Camden informs us, that this town is bound by its charter to send to the sheriffs of Norwich every year a hundred herrings baked in twenty-four pasties, which are to be delivered to the Lord of the Manor of East-Carlton, in the same county, who is to give a receipt for them, and convey them to the king.

so

ſo much valued as thoſe taken on the coaſts of France, which is principally owing to their not being ſo thoroughly cured.

THE Salmon fiſhery is very conſiderable in ſeveral places along the coaſts of England, Scotland, and Ireland; but Scotland ſeems to have far the greateſt ſhare in this branch of commerce. Moſt of the rivers of that kingdom abound with Salmon, which are taken at certain ſeaſons in ſurprizing numbers, and being pickled, are not only ſent to divers parts of England, but exported to Holland, France, Spain, and other countries. The greateſt part of what is ſold in London by the name of Newcaſtle Salmon is brought from Berwick upon Tweed, in which river vaſt quantities are taken: but the fiſhery at Aberdeen, in the rivers Dee and Don, exceeds any other in Scotland, and their Salmon are reckoned the beſt in Europe, which perhaps is owing to their being well cured, of which the magiſtrates take particular care. We may judge what plenty of theſe fine fiſh reſort from the ſea to the rivers juſt mentioned, where it is no uncommon thing to take above a hundred and fifty head of Salmon at a ſingle draught of a net.—We now proceed to the Continent, and ſhall begin with France, from which we are ſeparated only by a narrow channel.

CHAP.

CHAP. II.

Of FRANCE, *including* LORRAIN, ALSACE, *&c.*

SPRINGS, CAVES, *&c.*

THE Natural Hiſtory of France can ſcarce afford us a greater curioſity than the Salt Water Springs at Salins in the Franche-Comté, or County of Burgundy. The chief ſprings at Salins are in the middle of the town, in ſeveral ſubterraneous caves or vaults, of a great depth and extent. To view them we deſcend by forty ſteps of ſtone, and twenty of wood, into a vault near fifty feet long and thirty broad, where the noiſe of the waters and the engines at work to raiſe them is very ſurprizing. In this cave we ſee (by the light of torches) ſix ſprings of ſalt-water, and two of freſh, guſhing out of the ſame rock within the ſpace of five yards; and to prevent the waters mixing together, there are ſeveral channels made to convey them into different wells or baſons. From hence we go into other vaults, where the double arches reſt on very thick pillars; and in the middle of one of theſe is a large baſon, into which the waters of the Salt-Springs are gathered. Of theſe there are ſix or ſeven others, beſides thoſe already mentioned, and ten or twelve of freſh water; all which, as before obſerved, run into different baſons prepared for that purpoſe; and from hence they are raiſed by various engines, the freſh to be conveyed to the river, and the ſalt into large reſervoirs, one of which holds above fifteen thouſand hogſheads. From theſe

these reservoirs the water is drawn off into smaller ones, which surround the places where it is boiled to make salt. For this purpose they have several furnaces, over which are fixed huge iron pans or boilers, near thirty feet in diameter and fifteen inches deep, containing forty-five or fifty hogsheads. A very strong fire being made underneath, and gradually slackened, the water is boiled about twelve hours, in which it evaporates, and leaves the salt at the bottom of the pan almost perfectly dry. Then with a sort of rake they take off the uppermost part of the salt, which is the most valuable, being whitest and strongest; and the rest is formed into cakes or loaves, which when dried, are fit for use.

THE place where these springs lie, and all the works necessary for making salt, is surrounded with a strong wall, flanked with towers and crowned with a parapet, so that it has the appearance of a fortification. Round the inside of the wall are various buildings, some of which contain the engines that raise the waters, others the furnaces and kettles, and in others the salt is framed and dried. Some again are filled with casks, tubs, and other utensils, both for the use of the workmen and sending the Salt abroad; others serve as warehouses; and in others are kept great quantities of iron, and also the coals necessary for several forges, which are continually employed in making new boilers or mending old ones, the violence of the fire wearing them out in a little time *. The whole space thus inclosed is almost

* The pans or boilers are not so much worn out by the fire, as by the corroding of the brine; and therefore the pans at Droitwitch in Worcestershire are made of lead, and not of iron, as they are in Cheshire and other places.

three

three hundred yards in length, and a hundred in breadth.

THESE Springs (it is obſerved) are not all of an equal ſaltneſs, nor at all times, for they are found to produce more ſalt after heavy rains than in a dry ſeaſon *. To know the different degrees of ſaltneſs of the ſeveral Springs, they make uſe of a tube ſomewhat more than an inch in diameter, and eight inches deep, which being filled with the ſalt-water, they put into it a ſtick, at the bottom of which is ſome quickſilver to keep it upright; and this ſinks more or leſs in the water, according as it is leſs or more impregnated with ſalt. This ſtick, having ſeveral diviſions marked upon it, ſhews what quantity of ſalt a certain weight of water will produce; and accordingly they take care to add ſuch a proportion of the ſtrongeſt water to the weakeſt, as may anſwer the end of boiling it; for if the water be too weak, that is, if a hundred pound weight of it will not yield at leaſt eighteen or twenty pounds of ſalt, the profit will not anſwer the expence.

NEAR Bourbon-Lanci in the Dutchy of Burgundy, there is a mineral Spring which is very remarkable, if all be true that is related of its properties. It is ſaid to be ſo hot, that a man cannot keep his hand in it two minutes, and yet an egg left in it a whole hour will not grow hard. It has neither ſmell nor taſte; nor does it burn the lips when drank, or add any warmth to the ſtomach.

THE Burning Spring, which is reckoned one of the Wonders of Dauphiné, is in reality no

* According to Dr. Jackſon's account of our Salt Springs at Nantwich in Cheſhire, the workmen there obſerve quite the reverſe, viz. that more Salt is produced from the ſame quantity of brine in dry than in wet ſeaſons.

ſpring at all, but a ſpot of ground about two yards in length and one in breadth, on which there appears a ſmall wandering flame, like that of burning brandy. This ſpot lies on a ſteep rock of rotten ſlate; but the flame does not ſeem to proceed from any hole or fiſſure in the rock, nor can one perceive any matter proper to feed it, or any aſhes produced. There is indeed a kind of white and very ſharp Salt-petre to be found at ſome diſtance from the flame, which probably is fed by ſomething of that nature; but it is remarkable, that this flame burns much briſker in winter than in ſummer, decreaſing gradually as the heat increaſes, till it ſometimes goes quite out, and afterwards kindles again of itſelf. It may eaſily be lighted by any other fire, and when this is done it is attended with ſome noiſe. This is probably of the ſame nature with the everlaſting fire of Perſia, tho' it is in many reſpects leſs remarkable, and of which we ſhall give a particular account in treating of Perſia.

IN the road from Grenoble to Lyons, there is a large cavern or grotto, very wide at the entrance, but growing narrower by degrees, till we come to a lake, (as it is called) which is reckoned another of the Wonders of Dauphiné. But we cannot learn that this lake is any more than a rivulet or brook, which is common enough in places of this nature *,

THERE

* However this be, the French hiſtorian Mezeray tells us very ſeriouſly, that Francis I. who loved to enquire into curious and extraordinary Phænomena, had a mind to be acquainted with the particulars of this ſubterraneous Lake, and for that purpoſe ordered a flat-bottom veſſel to be built in the cave that leads to it, which was done accordingly. On each ſide of this veſſel they faſtened ſeveral boards, on which they placed a great many lighted torches; and having provided

THERE is a remarkable Fountain at Peroul, near Montpellier, in Languedoc, which heaves and boils up furiouſly in ſmall bubbles. This manifeſtly proceeds, (as Dr. Robinſon obſerved) from a vapour breaking out of the earth; for upon digging near it, and pouring other water upon the place newly dug, the ſame bubbling immediately enſued: and in ſeveral dry places thereabouts are found many ſmall ventiducts or ſpiracles, at which a ſteam iſſues forth, ſtrong enough to remove light bodies, ſuch as thin ſtraws, leaves, or feathers. It is obſervable, that this vapour does not take fire upon the application of a lighted candle, like the fumes emitted from the boiling ſpring near Wigan in Lancaſhire.

SEVERAL places in Bigorre, a part of Gaſcony, are noted for their Mineral Waters, and particularly their Hot Baths, to which people reſort in ſpring and autumn. The chief of theſe Baths are at Bagneres, which were known to the ancient Romans, from whence it was called Vicus Aquenſis. They are of various degrees of heat; but their waters do not change the colour of metals put into them, like thoſe of Bath in England.—Barege is a village at the foot of the Pyrenean Mountains, where there are four

vided matches, ſteel, flints, and other neceſſaries, with very able watermen, they put off from the ſhore with the king. After they had rowed ſome time, they perceived the breadth of the Lake was about half a league; but going near two leagues farther they heard a great noiſe, which became more frightful as they advanced; and they found the water ran with prodigious ſwifneſs. Imagining from hence there might be ſome abyſs not far off, they looſened one of the boards with the torches upon it, and ſet it adrift; which, being carried away with a vaſt rapidity, was ſoon overſet or ſwallowed. Terrified with this, they would venture no farther, but returned to the entrance of the grotto.

Baths of different degrees of heat. The water of the hotteſt ſmells like the mud of the ſea, and the very ſteam of it will turn ſilver firſt red and then black; but the alteration is quicker, if the metal be put into the water itſelf. The ſecond Bath is of the ſame nature, but not quite ſo hot. The water of the third is leſs hot ſtill; and that of the fourth is but lukewarm, being very much weakened by a mixture from ſome cold ſprings. Theſe Baths are reckoned good to remove rheumatic pains, and ſeveral other diſorders.

MOULINS, the capital of the Bourbonnois, is famous for its medicinal waters; and indeed this duchy has more mineral ſprings than any other province in France. The little town of Vichi is noted on this account; but the waters of Bourbon-l'Archambaud have been moſt frequented of late, being eſteemed of great efficacy againſt the gout, and other nervous diſtempers. They are impregnated with bitumen and an alkaline ſalt; ſo that if an acid be put into them, it cauſes a fermentation, and they will turn ſyrup of violets green, like oil of tartar.—A great many other mineral ſprings might be mentioned, but as they are not more remarkable than thoſe already enumerated, we ſhall conclude this article, only juſt taking notice of a Lake near St. Omer's, which is famous for the following extraordinary curioſity.

IN this Lake there are ſeveral Floating Iſlands, which are moved backwards and forwards, by means of poles, ropes, &c. Graſs grows on theſe Iſlands, and the people draw them near the ſhore, to drive their cattle into them; there are alſo ſome trees, but they are kept low, for fear the wind ſhould lay hold of them, and drive the Iſlands with too much violence. There are no

houſes

houſes upon them however, much leſs a church and monaſtery, as ſome have aſſerted.

FRANCE abounds with quarries of excellent marble, and has its mines of iron, copper, and lead, and even ſome of gold and ſilver, which laſt are not worked at preſent, the profit not anſwering the expence. Near Alet, in particular, a village at the foot of the Pyrenean Mountains, it is ſaid that gold was dug in the time of the Romans; and the rivulets that ſpring from thence do ſtill carry a golden ſand along with their waters. In 1672 M. Colbert got theſe mines to be worked, but finding only a few veins of copper, the undertaking was ſoon laid aſide. — Having therefore nothing extraordinary to ſay under the head of Metals, Minerals, or other Foſſils, we proceed to that of Vegetables.

VEGETABLES.

AS we are now going to ſpeak of ſome of the vegetable productions of France, we ought in juſtice to begin with the Vine, that noble plant or ſhrub of the reptile kind, ſo valuable for its fruit, and the rich liquor it affords. This plant was firſt brought from Aſia to Europe; and the Phœnicians, who were early navigators, eſpecially along the Mediterranean coaſts, transferred it to moſt of the Iſlands, as well as the Continent. It ſucceeded admirably in the Iſles of the Archipelago, and was afterwards introduced into Greece and Italy. From thence it paſſed the Alps, being found at Marſeilles and other places, when Gaul was conquered by Julius Cæſar: but the cultivation of the Vine was prohibited by Domitian, and neither the Gauls nor Spaniards were permitted to plant it till the reign of the

emperor Probus, who was ſenſible, that the promotion of agriculture ought to be inſeparable from a good government. Vines were at length propagated through all France and Spain; the German nations on the banks of the Rhine followed the example; and by degrees they were planted in all countries where there was any probability of their ſucceſs *.

THE ſpecies of Vines are almoſt infinite, and the manner of their culture is different in different countries. The plant itſelf is naturally weak, but nature has furniſhed it with ſmall tendrils †, which

* It appears by experience, that Vines are capable of being cultivated in England, ſo as to produce large quantities of grapes, and thoſe ripened to ſuch a degree, as to afford a ſubſtantial vinous juice; nor does it ſeem ſo much owing to the inclemency of our air, as to the want of a juſt culture, that our grapes are generally inferior to thoſe of France. Several of our vineyards have ſucceeded to admiration, particularly that at Bath, which is planted with white muſcadine and black cluſter grapes, and which (tho' not above ſix or ſeven acres of ground) yielded in the year 1736, no leſs than fourſcore hogſheads of excellent wine.—It is to be obſerved, that the forward grapes are fitteſt for the Engliſh climate.

† The contrivance of tendrils or claſpers is various in various kinds of vegetables, but admirable in all. Thoſe of ivy are covered with hair, and what is very remarkable, they yield a glutinous humour, by which they adhere cloſely to ſtones, &c. In this plant they not only ſerve for ſupport, but for a ſupply of juice; for as ivy mounts very high, and is of a compact ſubſtance, the ſap would not be ſufficiently furniſhed to the upper ſprouts, without theſe aſſiſted the mother-root. Sometimes claſpers ſerve for ſupport only, as thoſe of the Vine, briony, &c. whoſe branches being long and ſlender, would be weighed down by their own load, and that of their fruit, were it not for theſe claſpers, which, by a natural ſpire or circumvolution, catch hold of any adjacent body. This ſort of aſſiſtance, "ſo nicely accommodated "to the indigence of ſome helpleſs vegetables, and not to "be met with in any others, is a manifeſt indication (as Dr.

which it clasps round bodies that occur in its way, and supports itself by their assistance. In France it is raised on a single prop; but in some countries it is customary to support it by a strong reed, a pole, or wooden forks. It is common in Greece and Italy to train up the Vines to elms *, along the branches whereof they extend themselves unrestrained, and gradually ascend to the top. In Asia, where they have several species of very large grapes, they dispose their Vines on raised works of lattice, which form so many arbours, under which the natives enjoy a refreshing shade. In a word, the inhabitants of each country practise such methods as they think are

" Dr. Derham observes) of their being the contrivance and " work of the Creator, and that his infinite wisdom and care " condescends even to the service and well-being of the " meanest, most weak, and helpless insensitive part of the " creation."

* This was an ancient practice in Italy, as appears from many passages in the classicks, particularly Virgil, who describes it in the following lines:

——— *Superest* ———
Tum læves calamos, & rasæ hastilia virgæ,
Fraxineasque aptare sudes, furcasque bicornes,
Viribus eniti quarum & contemnere ventos,
Assuescant, summasque sequi tabulata per ulmos.
GEORG. L. II.

The next precaution of his rural cares
A range of reeds and forked props prepares:
On these the Vines their clasping progress form,
And brave the rigours of each rising storm;
Ascend the hospitable Elm, and spread,
Their swelling clusters o'er its verdant head.

It is certain however, that those Vines which run at liberty upon high trees, and are never pruned, afford the smallest wines; those that are tied to stakes about four feet high, and are duly pruned, yield stronger wines; and those yet stronger that are kept nearer the ground.

beſt adapted to their neceſſities; but none ſeem to be better acquainted with the management of the Vine, and conducting the proceſs of a vintage, than they are in ſeveral provinces of France, eſpecially in Champagne and Burgundy.

THE Vine ſhould never be planted in ſuch ſtrong ſoils as are fit for corn, but in one that is thin and light, rather dry than moiſt, and intermixed with gravel; and the declivity of a hill, lying to the ſouth, is the beſt ſituation for a vineyard. The propagation of the Vine by ſlips or cuttings, which ſhould ſtand two or three years in a nurſery before they are tranſplanted into the vineyard; and it may likewiſe be propagated by layers, that is, by bending ſuch of the fineſt ſhoots as ſhould otherwiſe be pruned off, and burying the old wood in a little trench, while that which is young riſes above the ſurface. Some Vine-dreſſers think the ſpring is the only proper ſeaſon for pruning; but thoſe who perform that operation immediat ly after the fall of the leaf will be convinced of the advantage of it the enſuing year. Thoſe Vines in France that are ſuffered to ſhoot to the height of five or ſix feet are laid down in a trench once in fifteen years, and covered with earth; and three or four of the fineſt ſhoots are extended in little trenches on each ſide, in order to furniſh ſo many layers. This is done in November; and the old wood, by thus exerting itſelf in a freſh ſoil, reſumes a new vigour. But the Vines of low growth, which produce the beſt wine, and are not permitted to aſcend above three feet at moſt, are laid in the earth every year, but not ſo deep as the former. The depth to which the high Vines are laid in the ground, makes it unneceſſary to furniſh them with new earth; but the low Vines muſt have a ſupply every twelve or fifteen

teen years. A moderate quantity of dung ſhould likewiſe be applied to Vines every ſeventh year where the ſoil is very light, and every twelfth year where it happens to be ſtronger. The propereſt time for training Vines to their prop, is when the flowers are juſt appearing; and about the ſame time the ends of the branches ſhould be cut off, and the little ſhoots retrenched that riſe from the bottom and ſides of the ſtock. It is alſo neceſſary, at different times, to clear away the weeds that ſpring about the ſtems of Vines, whereby the earth is either chilled or impoveriſhed.

WHEN the grapes are ripe, thoſe who are curious in their wines make three different gatherings, firſt chuſing the bunches that are moſt ripe, and have the feweſt, but fineſt grapes, and are careful to pick off all rotten or ſcorched berries, together with ſuch as have been pierced by inſects. In the ſecond gathering they pick off the large thick-cluſters, that are not quite ſo ripe as the others; and laſtly, thoſe that are green, withered, or rotten. Each of theſe gatherings are preſſed ſeparately, and what difference there muſt be in the wine may be eaſily apprehended. The grapes intended for white wine are preſſed immediately after they are gathered; but thoſe for red wine are not preſſed till they have been trodden, or ſqueezed between the hands; and the ſkins and pulp have ſtood together in the vat to acquire the requiſite tincture. And here it may be worth obſerving, (what many people are not acquainted with) that all white wine is not made from white grapes; but the very beſt and whiteſt wine, even that of Champagne, which has the complexion of cryſtal, is produced by the blackeſt grapes. The wine of theſe grapes, if not bruiſed, nor heated much by the ſun after they are gathered, but im-

mediately carried to the preſs, will be perfectly white; but the wine produced by the ſecond, third, fourth, and fifth preſſings, will be gradually reddened, as the preſs operates more effectually on the ſkin of the grape: and therefore the grapes for red wines are trampled and thrown into the vat before they are preſſed, (as above obſerved) it being found by experience, that the complexion of thoſe wines is paler or deeper, according as the juice of the ſkins is intermixed with that of the pulp in a leſſer or greater degree.

THE wine being drawn out of the vat, and diſtributed into proper veſſels, is ſuffered to ferment in the air for ſome days, which are more or leſs according to the ripeneſs of the grapes, and the temperature of the ſeaſon. Then the veſſels are gently ſtopped, ſo as to let the moſt fiery particles of the wine exhale for ſome time; after which it is lodged for the winter in an upper cellar, from whence it is removed into lower vaults as ſoon as hot weather returns, but is kept there no longer than the cloſe of autumn.—As to the management of wines in the cellar, the manner of drawing them off from the lees, the expedients uſed to fine them down, &c. the particulars are too many, as well as too foreign to our purpoſe, to be here related.

THE Olive-Tree claims our attention in the next place, and perhaps ſome may think we ſhould have given it the preference to the vine, as it yields an oil of almoſt univerſal uſe in food, medicine, and the manufactures. It thrives to perfection in the ſouthern parts of France, particularly in Provence, the oil of which country is by ſome preferred to that of Spain or Italy. The leaves of the olive-tree very much reſemble thoſe of the willow; and its fruit, which has a ſtone in it, is about the ſize of a ſmall nutmeg. The olives,

whilſt

whilſt upon the tree, are exceeding bitter; but this bitterneſs is corrected by the method of curing ſuch as are preſerved for eating. Thoſe intended for this uſe are gathered long before the olives are fit to yield their oil, and laid to ſteep for ſome days in freſh water; after which they are put into a lye made of aſhes and lime, and then removed into a liquor of water and ſalt, with which they are put up into little barrels to be ſent abroad. To give them a fine flavour, they throw over them an eſſence compoſed of cloves, cinnamon, coriander, fennel, or other aromatics; for this is a ſecret amongſt thoſe who deal in olives, in which indeed lies all the difficulty of the preparation.—To extract oil from olives, they are bruiſed under a mill-ſtone, and reduced to a paſte; which being mixed with hot water, and afterwards preſſed, the oil ſwimming uppermoſt is eaſily ſeparated. This is what we call Sallad Oil, and in thoſe countries where olives grow, it is commonly uſed inſtead of butter, of which they have no great plenty.

WE ſhall finiſh this article with the Larch-Tree, which is pretty much like the fir, and very uſeful in building, being almoſt as durable as cedar. It grows on many of the mountains of Dauphiné, and it is ſaid, that about Briançon they gather a kind of manna that falls upon its leaves in the night-time; but this is one of the pretended wonders of that province. This however is certain, that it produces agaric *, a ſort of fun-

* Agaric grows chiefly on the larch-tree, but is alſo found on ſeveral others. This of Dauphiné is not ſo good as that brought from the Levant, which is found in Muſcovy and Tartary. It is light, ſmooth, brittle, of a bitter taſte, and was a medicine in great repute among the ancients, but is almoſt baniſhed out of the preſent practice.

gous excreſcence, growing on its trunk or large branches, which is of uſe in phyſic, and in dying ſcarlet.

ANIMALS.

THOUGH the Silk-Worm is not originally a native of France, nor even of Europe, yet, as the French breed and manage them very ſucceſsfully in their ſouthern provinces, and have brought their ſilk manufactures to great perfection, we think this is not an improper place to give an account of that wonderful and profitable inſect. It was not till the year 555, or thereabouts, that two Greek monks, returning from the Indies to Conſtantinople, brought with them a number of Silk-Worms, and alſo inſtructions for hatching their eggs, rearing and feeding the worms, drawing out the ſilk, &c. upon which manufactures were ſet up at Athens, Thebes, and Corinth. In the twelfth century, Roger king of Sicily eſtabliſhed a manufactory at Palermo, and another in Calabria, having brought workmen from the cities of Greece, which he had conquered in his expedition to the Holy Land; and by degrees the reſt of Italy, as well as Spain, learned the art from the Sicilians and Calabrians. In the reign of Henry II. the French began to imitate their neighbours, and with good ſucceſs; and our king James I. was very deſirous of having mulberry-trees planted, and ſilk-worms propagated in England, where, from various experiments, it appears they will thrive and work as well as in any other part of Europe.

THIS inſect, from a ſmall egg, about the ſize of a pin's head, becomes a pretty large worm or maggot, of a whitiſh colour inclining to yellow. In this ſtate it feeds on mulberry-leaves, till being come

come to maturity, it winds itſelf up in a ſilken bag or caſe, about the ſize and ſhape of a pigeon's egg, and is metamorphoſed into an Aurelia*. Thus it remains without any ſigns of life or motion, till at length it awakes to become a butterfly, after making itſelf a paſſage out of its ſilken ſepulchre. It dies at laſt, having by its egg or ſeed prepared itſelf for a new life, which the warmth of the enſuing ſummer enables it to reſume.—But to be a little more particular.

THERE are two methods of bringing up theſe curious inſects, either by letting them expatiate at full liberty on the mulberry-trees that nouriſh them, as is practiſed in China and other hot countries; or elſe (as is cuſtomary in Europe) by keeping them in rooms furniſhed for that purpoſe with a ſort of hurdles made of oſier twigs, which are fixed in horizontal ranges one above another; and under every range there is a floor, which, like the bottom of a cage, may be drawn out at pleaſure. Over theſe hurdles are ſtrewed mulberry-leaves, upon which the inſects feed; and they are ſupplied with freſh leaves every morning. The leaves ſhould be gathered in a dry ſeaſon, and kept in a place where no moiſture can

* The terms Aurelia, Chryſalis, and Nympha, are uſed by naturaliſts to ſignify very near the ſame thing. As ſeveral inſects undergo a change of form, they ſeem to paſs through an intermediate ſtate, to acquire a new conception and a ſecond birth; being for this end wrapped up in a ſort of caſe or foldage, that varies according to the nature of the animal. In this ſtate the inſect is called a Nymph, which ſignifies a Young Bride, either becauſe it is veiled or covered from the ſight, or becauſe it then puts on its moſt beautiful attire. The term Chryſalis, or Aurelia, is moſt applicable to thoſe inſects whoſe films or coverings in this ſtate are tinged with a yellowiſh or golden colour.—Some apply the word Nympha to inſects whilſt in the egg, and others as long as they retain the form of worms or maggots.

come.

come. In fine weather fresh air should be let into the room from time to time, and great care taken to keep the place as neat as possible, particularly to cleanse the floors appointed to receive the fragments of their leaves and other impurities; for cleanliness and good air contribute greatly to their growth and welfare.

THE worms are hatched in boxes lined with linen or paper, over which it is usual to spread some soft mulberry-leaves; and from hence, when they have gained a little strength, they are removed to the ranges of hurdles above-mentioned. When the silk-worm leaves its little egg, it is perfectly black, but its head is of a more shining sable than the body. In a few days it assumes a whitish hue, or an ash-grey; after which its coat sullies, and becomes ragged, at which time the animal casts it off, and appears in a new habit. As it increases in bulk, it grows whiter, but a little inclining to a green; till ceasing to feed, and sleeping for almost two days, it divests itself of its skin a second time, and appears in its third habit; its colour, head, and whole form, being so much changed, that one would take it for another animal. It now begins to eat again, and continues to do so for some days, when it relapses into its former lethargy, at the conclusion of which it once more quits its covering; and having continued feeding some time longer, at length it renounces all feasting and society, and prepares for a retirement, by building itself a silken cell of an admirable structure and beauty.

THE beginning of this curious work looks like confusion, being only a sort of down or flue to keep off the rain, nature having ordained them to work upon trees in the open air, though we now bring them up in the house. This is the insect's first

firſt day's employment: on the ſecond it forms its ball or cone, almoſt covering itſelf over with ſilk; and the third day it is quite hid, and the reſt of the operation becomes inviſible; but it continues ſpinning for ſeveral days, till the cone is brought to perfection; and then folding itſelf in a ſort of ſhell, formed of a leſs delicate ſilk, intermixed with a glutinous matter, it takes its repoſe. Having remained in this ſtate fifteen days, or three weeks, and ſometimes longer, it is converted into a perfect butterfly, which forces its way out at the ſmall end of the cone, that being not ſo ſtrongly cemented, nor ſo exactly cloſed as the reſt of the covering.

BEFORE the butterfly leaves its apartment, it frees itſelf of all that ſuperfluous humidity which had been ſerviceable to it in its former ſtate; by which evacuation the ſilk is ſoiled and damaged, as well as by the opening the creature makes for its eſcape. To prevent this, the cones deſigned for uſe are expoſed to the heat of the ſun, or laid in an oven, by which means the inſect is deſtroyed before it comes to the ſtate of a butterfly; thoſe only being permitted to arrive to that maturity, which are deſigned to lay eggs for a future ſtock of ſilk-worms; and a ſmall number is ſufficient for this purpoſe, ſince one female fly ſometimes lays above five hundred eggs.

IN order to wind off the ſilk, the down is cleared away in the firſt place, and the cones thrown into a copper of warm water, where they are ſtirred about with ſmall twigs bound together, and cut like bruſhes; by which means the ends of the ſilk being diſengaged, are apt to catch on the twigs, and ſo are drawn out and faſtened to the reel; eight, ten, or twelve of them, being joined together, according as they would make a weaker

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or a ſtronger thread. The workman then gives motion to the reel by turning the handle, guides his threads, ſubſtitutes new ones when any of them break, and ſtrengthens them where neceſſary, by adding others, till the ſilk is exhauſted*. Then the cones, after opening them with ſciſſars, and taking out the inſects, (which are of ſome uſe for the feeding of poultry) are ſteeped three or four days in water, which is changed every day to prevent their ſtinking; and being thus ſoftened, and cleared of their gummy matter, they are boiled in a lye of aſhes well ſtrained, then waſhed in a river, and dried in the ſun. Thus prepared, they are carded like wool, and yield a kind of ſilken flax, which is ſpun with a wheel, and woven into ſtuffs of an inferior value.

To what we have ſaid concerning the Silk-worm, it will not be improper to ſubjoin a ſhort account of the Silk of Spiders, which the French have had the curioſity to manufacture into gloves and ſtockings. The diſcovery is owing to M. Bon, a member of the academy at Montpellier, who in the year 1710 publiſhed a diſſertation on the ſubject, wherein he reduces all the different ſorts of ſpiders to two principal kinds, viz. ſuch as have long legs, and ſuch as have ſhort ones, which laſt are thoſe that furniſh the ſilk. Theſe animals ſpin their ſilk out of the anus, around which are five papillæ, or ſmall nipples, whereby the threads are formed,

* Some who have conſidered attentively the fineneſs and length of the thread which the ſilk-worm ſpins, think they ſpeak within compaſs, when they affirm, that each cone or ball contains ſilk enough to reach the length of ſix Engliſh miles. This however is certain, that an ingenious perſon having meaſured the ſilk drawn from one of theſe balls, it was found to be a great deal above three hundred yards, and yet weighed but two grains and a half. — See BOYLE de Subtilit. Effluv. C. 2.

ſome

ſome weaker and ſome ſtronger, according to the uſe for which they are deſigned. The weaker ſorts of threads are thoſe which ſerve to make their webs, in which they catch flies; but they ſpin a much ſtronger kind, wherein they wrap up their eggs, and by that means preſerve them from the cold, and from ſuch inſects as would deſtroy them. Theſe threads they wind very looſely round the eggs, reſembling in ſhape the balls or bags of ſilk-worms that have been prepared and looſened for the diſtaff. Having collected twelve or thirteen ounces of theſe bags, M. Bon had them well beaten for ſome time with the hand and a ſmall ſtick to get out the duſt. He then waſhed them in warm water, changing it ſeveral times till they left the water very clean, and afterwards laid them to ſteep in a large veſſel with ſoap, ſalt-petre, and gum arabic. Then letting the whole boil together two or three hours over a gentle fire, he waſhed them again with warm water to free them from the ſoap, and laid them to dry ſome days to fit them for carding; which was performed by the ſilk-carders, but with cards much finer than ordinary. By this means he had a ſilk of a particular aſh-colour, which was eaſily ſpun, and the thread was ſtronger and finer than that of common ſilk. Of this he had ſtockings and gloves made, and found that three ounces of it would make a pair of ſtockings for the largeſt man, whereas thoſe of common ſilk weigh ſeven or eight ounces.

THE poſſibility of making this ſilk being ſhewn, the only difficulty lies in procuring a ſufficient quantity of ſpiders bags; which would be no difficulty at all, if we had the art of breeding them as they do ſilk-worms; for ſpiders multiply much more, and are not ſo ſubject to diſeaſes. M. Bon, who kept a great number of young

ſpiders

ſpiders in paper coffins and pots covered with paper pricked full of pin-holes to give them air, obſerved, that of ſeven or eight hundred ſcarce one died in a year, whereas of a hundred ſilk-worms not forty lived to make their bags. This gentleman procured his ſpiders in the months of Auguſt and September, at which time their eggs are hatched, the old ones that laid them dying ſoon after.

FROM M. Bon's experiments it was at firſt ſuppoſed, that great advantage might have been made of theſe inſects; but M. Reaumur, who was appointed by the Royal Academy of Sciences to make a farther enquiry into this new manufacture, has left us no hopes of its ever turning to any account. The natural fierceneſs of the ſpiders (he obſerves) renders them unfit to be bred and kept together; for having diſtributed four or five thouſand into diffeteut cells, fifty in ſome, a hundred or two in others, where they were fed with flies and the bloody ends of young feathers, the large ones eat the little ones, ſo that in a ſhort time they were almoſt every one deſtroyed; and to this inclination of devouring one another, we may in ſome meaſure aſcribe the ſcarcity of ſpiders, conſidering the number of eggs they lay. It is therefore impoſſible to eſtabliſh theſe creatures into a community; and were it practicable, it would require too much room and application, becauſe a much greater number of ſpiders than of ſilk-worms would be neceſſary to produce the ſame quantity of ſilk; beſides that the ſpider's bag is inferior to that of the worm both in luſtre and ſtrength. According to M. Reaumur's computation, 2304 worms will produce a pound of ſilk; and as he reckons the work of twelve ſpiders only equals that of one ſilk-worm, a pound of ſilk would require

require 27,648 ſpiders; nay, he ſuppoſes double that number muſt be kept for that end, as the bags are only ſpun by the females.

We might here deſcribe the delicate and wonderful texture of the ſpider's web, and her manner of weaving it; but as every one has an opportunity of making his own obſervations on theſe matters, we ſhall paſs them by, and only take notice of an admirable faculty ſome ſpecies of theſe inſects are endued with of conveying themſelves from one place to another, which perhaps may be unknown to many of our readers. The ſpider having a mind to change its ſituation, hangs perpendicularly by a thread, and, turning its head towards the wind, ſhoots out ſeveral others from its anus, like ſo many darts, which being wafted to and fro by the air, faſten on trees, walls, or other ſolid bodies. If the inſect perceives they are faſt, which ſhe tries by drawing them in with her feet, ſhe makes uſe of them as a bridge to paſs to the place where they are fixed. But this is not all; for it has been obſerved, that ſpiders ſometimes dart out threads to the length of ſeveral fathoms, and then, breaking the thread which they hung by, let themſelves looſe, and are carried ſwiftly through the air, ſeizing (as is ſuppoſed) on gnats and other inſects in their paſſage. In autumn the air is often filled with theſe floating threads, which unite, lengthen, and ſtick to every thing in their way; and this ſeems to be the chief ſeaſon of the ſpiders failing in this manner, though they dart their threads at other times, and breaking them off, let the wind carry them away *.

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* The darting of ſpiders was perhaps known to the Ancients, as may be conjectured from ſome hints in Ariſtotle and Pliny;

ANTIQUITIES.

MANY parts of France abound with curious monuments of antiquity; and particularly at Niſmes, a very ancient city of Languedoc, there are ſtately remains of a Roman amphitheatre *, which is counted the fineſt monument of the kind now extant, and was built in the reign of Antoninus Pius, who contributed a large ſum of money towards its erection. It is of an oval figure, one thouſand and eighty feet in circumference, capacious enough to hold twenty-three thouſand ſpectators. The architecture, ſays Dr. Smollet, is of the Tuſcan order, ſixty feet high, compoſed of two open galleries, built one over the other, and conſiſting of ſixty Arcades. The entrance into the Arena was by four great gates with porticos; and the ſeats, of which there were thirty, riſing one above another, conſiſted of large blocks of ſtone, many of which are ſtill remaining. Above the north gate are two bulls, cut in alto relievo, extremely well executed, emblems, which, according to the cuſtom of the

Pliny; but as to their ſailing through the air, it ſeems to have been firſt obſerved by Dr. Hulſe or Dr. Liſter, in the laſt century. The latter, in a letter to Mr. Ray, ſpeaking of the height that ſpiders are able to fly to, ſays, that in October (1670) taking notice that the air was very full of webs, he immediately mounted to the top of the higheſt ſteeple on the Minſter [in York] and could there diſcern them yet exceeding high above him.——See Derham's Phyſico-Theol. p. 363.

* The difference between a theatre and an amphitheatre is this; the former was almoſt ſemicircular, and intended for plays or dramatic performances; the latter was of an oval figure, like two theatres joined together, and was built for exhibiting public ſhews to the people, ſuch as the combats of gladiators, wild beaſts, &c.

Romans,

Romans, signified that the amphitheatre was erected at the expence of the people. In other parts of the structure is some work in basso relievo, and heads or busts, but indifferently carved. This amphitheatre stands in the lower part of the town, and strikes the spectator with awe and veneration. The external architecture is almost entire, but the Arena is filled with houses. This structure was, in the beginning of the sixth century, fortified as a citadel by the Visigoths, who raised within it a castle, two towers of which are still standing, and encompassed it with a broad and deep ditch, which was filled up in the thirteenth century. In all the subsequent wars, to which this city was exposed, the citizens fled to it as a place of strength; whence it sustained a great number of successive attacks, so that its preservation is almost miraculous. It is, however, likely to suffer much more from the Gothic avarice of its own citizens, some of whom are mutilating it every day for the sake of the stones, which they employ in their own private buildings. There are also in France the remains of several other amphitheatres, particularly of one at Perigueux, in Guienne, another at Chalons, in Burgundy, at Arles in Provence, and at Vienne, in Dauphiné.

A BUILDING at Nismes, called the Maison Carré, exhibits the most exquisite beauties of architecture and sculpture. This edifice is supposed to have been erected by the emperor Adrian, who actually built a Basilica in this city, though there are no vestiges of it remaining: but an inscription built on the front of this noble structure plainly proves, that it was erected by the inhabitants of Nismes, in honour of Caius and Lucius Cæsar, the grandchildren of Augustus, by his daughter

daughter Julia, the wife of Agrippa. This fine edifice, which ſtands on a pediment ſix feet high, is eighty-two feet long, thirty-five broad, and thirty-ſeven in height, without reckoning the pediment. The body of it is adorned with twenty columns, engaged in the wall, and the periſtyle, which is open, with ten detached pillars that ſupport the entablature. They are all of the Corinthian order, fluted and embelliſhed with the moſt exquiſite ſculpture: the frize and cornice are worthy of admiration, and the foliage is eſteemed inimitable. The proportions of the building are ſo happily adjuſted, as to give it an air of majeſty and grandeur, which the niceſt ſpectator cannot behold without emotion. Mr. Smollet, on mentioning the ornaments of the building, ſays, they are indeed ſo exquiſite, that you may return to them every day with a freſh appetite, for ſeven years together; and that what renders them the more curious is their being ſtill entire, and very little affected, either by the ravages of time, or the havock of war. Cardinal Alberoni declared, that this ſtructure was a jewel that deſerved a cover of gold, to preſerve it from external injuries.

THERE are here alſo noble remains of Roman Baths, and near them are the ruins of an ancient temple, which according to tradition was dedicated to Diana: but connoiſſeurs obſerve, that all the ancient temples of that goddeſs were of the Ionic order, whereas this is partly Corinthian, and partly Compoſite. It is about ſeventy feet long, and thirty-ſix in breadth, arched above, and built of large blocks of ſtone, joined together with great exactneſs, though without any cement: the walls are ſtill ſtanding, with three great tabernacles at the farther end, fronting the en-

entrance. On each ſide are niches, in the intercolumination of the walls, with pedeſtals and ſhafts of pillars, cornices, and an entablature, which ſhew the former magnificence of the building.

AMONG the antiquities of France, we ought not to forget the famous Pont du Garde, which ſtands on the right hand, about the diſtance of a league from the poſt-road from Montpellier to Miſmez, and about three leagues from the laſt city; which, though raiſed in the Auguſtine age, by the Roman colony of Niſmez, to convey a ſtream of water between two mountains, for the uſe of that city, Mr. Smollet ſays, is as freſh as Weſtminſter-bridge, the climate being either ſo pure and dry, or the free-ſtone with which it is built, ſo hard, that the very angles remain as acute as if they had been cut laſt year. Indeed, he adds, ſome large ſtones have dropped out of the arches; but the whole is admirably preſerved, and preſents the eye with a piece of architecture ſo unaffectedly elegant, that he ſays, he will defy the moſt phlegmatic and ſtupid ſpectator to behold it without admiration. It croſſes the river Gardon, which is a beautiful ſtream, rolling over rocks, that form a number of pretty natural caſcades, and is overſhadowed on each ſide with trees and ſhrubs, which greatly add to the rural beauties of the ſcene. This work conſiſts of three bridges, or ranges of arches, one above another: the firſt of ſix, the ſecond of eleven, and the third of thirty-ſix. The height, including the aqueduct on the top, amounts to a hundred and ſeventy-four feet, and the length between the two mountains, extends to ſeven hundred and twenty-three. It is of the Tuſcan order, but its ſymmetry is inconceivable. By ſcooping the baſes of the pilaſters of

of the second tier of arches, they had made a passage for foot-travellers: but though the ancients, says the above author, far excelled us in beauty, they were inferior to the moderns in point of convenience. The citizens of Avignon have, in this particular, improved the Roman work with a new bridge, constructed on the same plan with that of the lower tier of arches, of which indeed it appears to be a part, affording a broad and commodious passage over the river, to horses and carriages of all kinds.

In several cities of France we also find the remains of triumphal arches, which it was the custom of the ancients to erect, not only to adorn a triumph on returning from a victorious expedition, but to preserve the memory of the conqueror to posterity. There is one of these at Rheims, in Champagne, consisting of three arches, with chamfered columns, and adorned with bass-reliefs. The middle arch, which is the largest, is thirty-five feet high and fifteen wide, having on it the figure of a woman with two Cornucopias * in her arms, which perhaps were intended to denote the fruitfulness of the country: four children about her express the four seasons of the year, and the twelve months are represented by so many proper figures. On one of the side-arches we see the story of Romulus and Remus sucking the wolf,

* The Cornucopia, according to the fiction of the ancient poets, signifies a Horn, out of which proceeded plenty of all things, given by Jupiter to his nurse Amalthea, in reward of her services; though some apply it to the horn of Achelous, said to be broken off by Hercules, understanding thereby his stopping a branch of that river from spoiling the country, and the fertility which thereupon ensued. In architecture and sculpture, the Cornucopia is represented under the figure of a large horn, out of which issue fruits, flowers, &c.

attended

attended by the ſhepherd Fauſtulus and his wife Acca Laurentia: and on the other arch is Leda embracing Jupiter transformed into a ſwan, and a cupid lighting them with a flambeau. — One of the preſent gates of the city of Orange was a triumphal arch, erected by C. Marius, on account of a victory obtained over the Cimbri and Teutones, who made an inroad into Italy. Here are alſo the ruins of a Roman Circus *, and divers other remains of antiquity.

NEAR Autun in Burgundy are ſeveral ancient columns and pyramids; but of all the curioſities of this kind in France, there are none ſo much admired as a fine obeliſk † of oriental granite ‡ at Arles in Provence, which is fifty-two feet high, and ſeven in diameter at the baſe, and yet all but one ſtone. It lay hid many ages in the ground in a private garden near the Rhone, till the magiſtrates cauſed it to be dug up in the year 1675, and erected in the city, of which it is one of the nobleſt ornaments.—At Autun we likewiſe ſee the remains of a temple of Janus, now called the Janitoye; and the ruins of other heathen temples are to be found in ſeveral other parts of the kingdom.

* The Circi were large ſtructures, generally of an oblong or oval figure, built for the celebration of ſeveral ſorts of games or exerciſes, viz. wreſtling, boxing, fighting with ſwords, ſtaves, or pikes, throwing the diſcus or quoit, racing on foot, on horſeback, or in chariots, &c.

† An obeliſk is of a quadrangular figure, not very broad at the baſe, but growing narrower and narrower to the top, which terminates obtuſely, and not in a point. The difference between obeliſks and pyramids, according to ſome, conſiſts in this, that the latter have large baſes, and the former very ſmall ones.

‡ This is a very hard ſort of marble, ſo called from its being ſprinkled over with a great many little ſtains, reſembling grains of ſand.

IT would be tedious to enumerate the remains of aqueducts, public baths, and other Roman ſtructures; and therefore, to the monuments of antiquity already mentioned, we ſhall only add that large round buckler of maſſy ſilver, (being twenty inches in diameter, and weighing twenty-one pounds) which was fiſhed out of the Rhone near Avignon in 1665. It is above 1900 years old, and is charged with Scipio Africanus, half-mantled, attended by Roman officers, and the Spaniards ſupplicating for a fair virgin; it being conſecrated to that virtuous general upon his reſtoring a beautiful captive to Allucius, prince of Celtiberia, to whom ſhe was eſpouſed.

BUILDINGS.

WE ſhall begin this article with the cathedral of Notre Dame at Paris, not becauſe it is the fineſt ſtructure of that kind, but becauſe it ſtands in the metropolis of the kingdom. It is an ancient Gothic building, ſaid to have been founded by king Childeric in the year 522, and finiſhed by his ſucceſſors; but it is rather ſtrong than magnificent. It is built in the form of a croſs, has a ſmall ſpire in the middle, and at the weſt end two large ſquare towers flat at top, with galleries round them on the outſide. The ſtatues of twenty-eight kings of France are placed in a row of niches on the front; and the roof, which is very lofty, is ſupported by a hundred and twenty large pillars. In the choir there are a great many fine paintings, rich tapeſtry, and abundance of gold and ſilver plate for the ſervice of the altars. The high altar is compoſed of the fineſt Egyptian marble, and in ſhort the whole choir is beautified in an extraordinary manner, whether

whether we regard the richneſs of the materials, or the excellency of the workmanſhip.

THE cathedral of Sens in Champagne, which is dedicated to St. Stephen, is a large and ſtately edifice, remarkable for the figures that adorn its front, and its two lofty towers. The inſide is admired for its rich chapels, its ancient tombs, and particularly for its high altar, at the foot of which is a table of gold, enriched with precious ſtones, repreſenting in baſs-relief the four Evangeliſts, and St. Stephen on his knees.

THE cathedral of Rheims in the ſame province, is a very fine building, though in the Gothic taſte; the architecture is delicate, and the gate and portico are reckoned the moſt ſtately in the whole kingdom. It is alſo famous on account of its being the church where the French kings are uſually crowned and anointed by the archbiſhop of that city.

AT Rouen in Normandy, the cathedral church, dedicated to the Virgin Mary, is a vaſt and beautiful ſtructure, having three lofty towers, on one of which is a tall wooden ſpire, covered with gilt lead, that makes a pretty appearance. Over the great gate is a triumphal arch in honour of king Henry the Fourth, with emblems of his victories over the Leaguers, who are repreſented gnawing their chains. In this church are many magnificent tombs of the ancient dukes and archbiſhops, and alſo that of John duke of Bedford, who was regent of France under Henry VI. of England. But the moſt remarkable thing of all is the famous great bell that hangs in one of the towers, which is thirteen feet high, and weighs about forty thouſand pounds.

THE cathedral at Lyons, dedicated to St. John, is a magnificent and venerable fabric; and the

front of the high altar, which ſtands in the middle of the choir, was formerly adorned with abundance of fine images, moſt of which were defaced during the civil wars. This church has long been famous for the ſurprizing mechaniſm and motions of its clock, which is placed in an iſle near the choir. On the top of it ſtands the figure of a cock, which every three hours claps his wings and crows thrice; whilſt a door opens on one ſide in a gallery underneath, out of which comes the Virgin Mary, and from a door on the other ſide an angel meets and ſalutes her. At the ſame time a door opens above, from whence the form of a dove, repreſenting the Holy Ghoſt, deſcends on the Virgin's head. After this they retire, and from another door comes the figure of a venerable father, lifting up his hands, and bleſſing the people. The days of the week are repreſented by ſeven figures, each of which takes its place in a niche on the morning of the day it repreſents, and continues there till midnight, when it retreats and is ſucceeded by another. There is likewiſe a very ſingular curioſity belonging to this clock, viz. an oval or elliptical plate marked with the minutes of an hour, which are pointed to by a hand reaching the circumference, and which inſenſibly extends and contracts itſelf during its revolution, ſo as exactly to fit the ſhorteſt as well as the longeſt diameter. — But the reader muſt ſuppoſe this is rather an account of what the clock has been formerly, than what it is at preſent, many parts of it through length of time being much impaired *.

THERE

* This clock was repaired and improved by one Nourifon in 1661; but it was contrived long before that time by Nicholas Lipp, a native of Baſil, who finiſhed it in 1598. After this, it is ſaid, he had his eyes put out by the magiſtrates

THERE is another cathedral that deſerves to be mentioned, namely, that of Straſburg in Alſace, which, though formerly a part of Germany, is now annexed to the dominions of France, and therefore belongs to this chapter. It is certainly one of the fineſt churches in Europe, and its ſteeple is a noble pyramid, ſaid to be five hundred and ſeventy feet high: but this is almoſt incredible. In this church there is a clock, which is looked upon as a maſter-piece of aſtronomy and mechanics, and, when in its perfection, ſeems not only to have exceeded that at Lyons, but perhaps had not its fellow in the world for the variety of its figures and motions, many of which are now entirely ſtopped, or much out of order.—The baſis or foundation as it were of this curious machine conſiſts of three plates, a ſquare one on each ſide, and a round one in the middle. This round one has three circles, one within another, two of which are moveable, and the third fixed. The outermoſt is ten feet in diameter, and turns about once in a year, ſhewing the months and days. The circle within this, whoſe diameter is a foot leſs, was made to turn round in the ſame time, and ſhew the vigils and feſtivals; which it did during a whole century, but is ſtopped at preſent. The innermoſt ſerves only for an ornament, containing a repreſentation of Alſace and the city of Straſburg, and is therefore immoveable. The two ſquare plates uſed to point out the eclipſes of the ſun and moon, but they do not now perform that ſervice. — Above theſe three is

trates of Lyons, that he might never be able to make ſuch another; but this ſtory is entirely groundleſs. — The elliptical minute-motion was invented by M. Servier, and is of a later date.

another large plate, in the middle of which is an aſtrolabe ſhewing the courſe of the heavens, with the four Seaſons painted round it. There is alſo a dial-plate which ſhews the hours and minutes; and underneath it the ſeven days of the week, repreſented by the ſeven planets, paſs by turns in a chariot. Here is likewiſe a face of the moon, ſhewing its age and different aſpects. — In the third or uppermoſt part of this machine are four figures, repreſenting the four ages of man's life, which come and ſtrike on ſmall bells every quarter of an hour. A cock made of metal ſtands on the top of an arch, ſtretches out his neck, and proclaims the hour by crowing. Then comes Death, driven away by Chriſt riſen from the dead, who nevertheleſs permits him to ſtrike the hour, that men may remember they are mortal.— This wonderful piece of machinery was finiſhed in the year 1573, but who was the artiſt that contrived it is unknown.

FROM the churches we proceed to take a view of ſome of the royal palaces, and firſt of the Louvre, which is the chief ornament of Paris. This ſtately palace is ſituated on the river Seine, but has never been finiſhed according to the original deſign. The weſt front was erected by Lewis XIII. who built a large pavilion, in form of a dome, over the gate, ſupported by two rows of pillars of the Ionic order. In the middle of the eaſt front, which was built at a vaſt expence by Lewis XIV. and is a hundred and ſeventy-five yards in length, is the principal gate, with a portico ſupported by forty Corinthian columns. The apartments within are anſwerable to the noble appearance of the building without; but we ſhall not attempt a more particular deſcription of this palace,

B. Cole. Sculp.

A View of the Palace of Versailles.

palace, as great part of it was burnt down a few years ago.

THE Louvre has a communication with another beautiful palace called the Tuileries, by a gallery built by Henry IV. which fronts the river, and is reckoned the fineſt in Europe. It is about 450 yards long, and ten yards broad, and is filled with exquiſite paintings and ſculptures. Underneath this gallery is the royal printing-houſe, and the apartments of the king's painters, engravers, carvers, and other ingenious artificers. The palace itſelf is one range of building, with a ſquare pavilion at each end, and a dome in the middle; and the whole is adorned with columns, pilaſters, and other proper ornaments. The gardens behind it are exceeding beautiful, and towards the river there is a fine terrace planted with rows of trees, near 600 yards in length, and twenty-eighth in breadth, from whence there is a delightful proſpect over part of the city and the adjacent country.

BUT of all the royal palaces there is none ſo deſervedly admired as that of Verſailles, about nine miles from Paris; which from a ſmall caſtle, or rather country-houſe, built by Lewis XIII. for a hunting-ſeat, is now become one of the moſt magnificent palaces in the world. It ſtands on a riſing ground in the midſt of a valley, ſurrounded with little hills, at an agreeable diſtance. The avenues to it are very fine and ſpacious, particularly that on the ſide towards Paris, which conſiſts of three walks formed by rows of elms, the middle one ſixty feet wide, and each of the ſide-walks thirty. This avenue ends in a large ſquare, which has a fountain in the middle of it; and from thence we aſcend to the great court of the

palace, which is 480 feet long, having on each ſide apartments for the ſecretaries of ſtate, and other great officers of the crown. Out of this court there is an aſcent of three marble ſteps into another leſs than the firſt, which is likewiſe adorned with a fine fountain; and from thence we aſcend by five ſteps into a third court ſtill leſs than the former, which is paved with black and white marble, and has a marble fountain and baſon in the middle, with ſtatues of gilt copper. This court is terminated by the royal palace, in the front of which there is a ſtately portico ſupported by eight marble pillars of the Doric order, and three iron doors richly gilt and wrought, by which we enter into the hall and ſaloons, and from thence proceed to the aparments on the right and left. The principal ſtair-caſe, which conſiſts of the fineſt marble, is ten yards wide, and is adorned with admirable paintings and ſculptures. Throughout this palace indeed there is a vaſt variety of moſt beautiful marble; and in general the rooms are very lofty, and richly furniſhed, the bedſteads and tables in ſome of them being of maſſy ſilver, or materials of equal value. It is obſervable, that the nearer we come to the king's apartments, the more ſumptuous are the marble, ſculptures, paintings, and furniture. The king's bedchamber is adorned with excellent carvings, all gilt on a white ground; and the bed, which is of crimſon-velvet embroidered with gold, is placed in a ſort of alcove, wherein are two figures of Fame repreſented ſitting, and France in the ſame poſture, ſeeming to watch for the preſervation of her monarch. On one ſide of the bed is the picture of David playing on his harp, and on the other St. John in the iſland of Patmos. There are other fine paintings in this chamber,

chamber, particularly one of Hagar in the desert, with her son and an angel.

THE front of this palace, that looks towards the gardens, is the most beautiful, having a portico a hundred yards long, paved with marble, and supported by marble pillars. Here we see the figures of the twelve months of the year; and in the embossed works that adorn the front, are statues of little children, employed in exercises proper to the seasons they represent. On this side is a noble gallery, above seventy yards long, which has a fine prospect over the gardens, and is filled with a great variety of busts and statues. On the cieling the battles and principal actions of Lewis XIV. with other memorable occurrences of his reign, are curiously painted. The cabinet of rarities is of an octogonal figure, in which we see a surprizing collection of curiosities in agat, crystal, jewels, medals and other antiquities, with several paintings by the greatest masters. Every thing, in short, that we cast an eye upon in this palace, is sumptuous and beautiful; and we should far exceed our limits, if we should barely enumerate the many fine paintings and antique statues with which the apartments abound. The halls of Plenty, of Venus, and of War, are all adorned with excellent paintings; and in this last we likewise see the busts of six Roman emperors, in porphyry, with a drapery of gilt brass, placed on pedestals of oriental alabaster.—The Chapel is perfectly answerable to the magnificence of the rest of the palace; and the very stables, for conveniency, beauty, and architecture, far exceed any in Europe, and are superior to many royal palaces.

WHAT we have said may give the reader some faint notion of this majestic edifice; but we must not leave it without taking some notice of its

beautiful gardens, which may be reckoned among the modern wonders. Coming down from the terrace, we meet with two baſons, wherein are ſeveral water-ſpouts or Jets d'Eau, (as the French call them) and in the middle of each is a collection of ſpouts in the form of a wheat-ſheaf, which throw up water to the height of nine and twenty or thirty feet. The borders of theſe baſons are adorned with ſeveral groups of brazen figures, repreſenting river nymphs, Cupids, &c. In the angles of this parterre are two other baſons of marble, wherein the ſpouts form two fine ſheets of water, and upon the borders are ſeveral figures of animals, made alſo of braſs. Below theſe baſons is another very fine one, in the middle of which is the figure of Latona, with her two children, Apollo and Diana. She is ſuppoſed (according to the ſtory) to have made her complaints to Jupiter of the ill treatment ſhe met with from the peaſants of Lycia, who, for their puniſhment, are here repreſented as metamorphoſed into frogs, which throw out above ſeventy ſpouts of water. The figures are of white marble, and the whole is reckoned an excellent piece of ſculpture. There are many other fountains, caſcades, &c. the beauty of which can ſcarce be conceived by any deſcription; but what is moſt admired, is the grand canal, ſixteen hundred yards long, and ſixty-four broad, at each end of which is a large baſon of an octogon figure, and in the middle it is interſected by another canal about two hundred and ſixty yards in length. Upon this noble canal the court ſometimes divert themſelves in yachts and galleys. The Labyrinth, or Maze, is a fine grove, ſo called, becauſe it is difficult to find one's way out of it, the walks being ſo interwoven with each other. At the entrance we meet with two ſtatues, the

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one of Æsop, and the other of Cupid, holding a clue of thread in his hand, intimating to the stranger the necessity of such a guide to prevent his being lost in the many intricate windings of the place. The whole is adorned with statues and fountains, and particularly a bason of curious shell-work, wherein one of Æsop's Fables is represented in the most natural manner.—The Orangery or Green-house is a noble piece of architecture, consisting of several galleries, of which the largest is above four hundred feet long, and thirty broad, and all of them adorned with beautiful columns of the Tuscan order. Before this Green-house is a fine parterre, with a fountain in the middle of it, where the water is spouted up to the height of forty feet; and the whole parterre is adorned with rows of columns, groups of figures, statues, vases, and other ornaments.

It would be going far beyond our bounds, to mention every thing worth observing in these delightful gardens; but there is one particular more surprizing than any we have yet taken notice of, viz. the manner whereby they are supplied with water from the Seine, which is four or five miles distant. This is done by a wonderful engine standing on a branch of that river, whose stream turns several large wheels, which set two hundred and twenty-five pumps a-going; and by this means the water is raised up into a tower upon a hill, above an hundred and twenty yards higher than the river. From hence it runs along an aqueduct of thirty-six arches, and from thence is conveyed through large pipes to the reservoirs of Marli, another royal seat, remarkable for its fine cascades and other water-works; all which, as well as those of Versailles, are supplied from these reservoirs, so that the canals, basons, &c. are always

full in the dryeſt ſeaſons *.—Lewis XIV. had a deſign of conveying the water of the river Eure to Verſailles, and accordingly cauſed prodigious works to be begun near Maintenon in the year 1684, which were diſcontinued in 1688, on the breaking out of the war, and have been left unfiniſhed. The magnificent aqueduct erected on this occaſion, conſiſting of 242 arches, is yet ſtanding, and is perhaps the nobleſt in the world.

IN the Park of Verſailles is another palace, called Trianon, which is a genteel and magnificent ſtructure, the architecture and ornaments being in a fine taſte. The front is about a hundred and twenty-eight yards in length, and the court before it is adorned with a noble periſtile ſupported by marble columns and pilaſters. The two wings are terminated by two pavilions, and the whole building is crowned with a baluſtrade adorned with ſtatues and urns. In the apartments are fine pictures, and the furniture is very ſumptuous. The gardens are here likewiſe embelliſhed with baſons, caſcades, and groups of figures, done by the beſt maſters.

MARLY is another royal ſeat, delightfully ſituated in a park contiguous to Verſailles, it having a fine proſpect of the caſtle of St. Germain, and of the neighbouring country. This palace conſiſts of a large pavilion, which ſtands detached from any other, and of twelve ſmaller ones, ſix on each

* As the conveying the water of the Seine to Verſailles at firſt coſt immenſe ſums, ſo the keeping this famous machine of Marli in repair, is ſaid to be attended with an annual expence of at leaſt 25,000 pounds ſterling. And this has given a modern hiſtorian occaſion to obſerve, that Lewis XIV. ſhewed his grandeur, or rather his vanity, by making choice of a place which had no water near it, to erect the fineſt water-works in the world, which nothing but a boundleſs treaſure could have effected.

ſide,

ſide. The outſide of the large one is adorned with paintings in Freſco, and the ſteps are embelliſhed with the figures of ſphinxes, groups of children, and vaſes.

THE Great Hall is adorned with ſixteen pilaſters, paintings, and fine looking-glaſſes; and in the apartments of the king, and thoſe of the royal family, are beautiful pictures, repreſenting the ſieges carried on by Lewis XIV. The ſmall pavilions are joined to each other by arches, thro' each of which you enter a little arbor. In theſe pavilions are apartments for perſons of quality.

IN the gardens is a large caſcade, which is properly a river falling from a very high place, and forming beautiful ſheets of water. At the bottom are ſeveral baſons, adorned with groups, ſtatues, &c. The ſide of the parterre fronting the large pavilion, affords a moſt extenſive and beautiful proſpect. From this parterre you deſcend to another, adorned with marble ſtatues and a baſon in the middle, which has a number of water-ſpouts, forming a wheat-ſheaf. Beyond this is a large baſon ſurrounded with walks and graſs-plats. In going ſtill farther down, you meet with two other baſons, embelliſhed with ſhell-work and groups of figures in white marble. The water falling out of theſe baſons forms ſeveral ſheets, and enters another below. Among the other pieces of water is another caſcade, which pours down a ſteep hill into a large baſon, in the midſt of which is a ſmall one of gilt braſs, ſupported by three Tritons of the ſame metal.

THE Palace of Fontainbleau is 35 miles to the ſouth-eaſt of Paris, and conſiſts of ſeveral ſets of buildings added to one another at different times, without any order or ſymmetry, which form a confuſed maſs of various kinds of architecture; yet

yet this very confuſion has an air of grandeur that ſtrikes the eye. It is ſurrounded by a large foreſt, in which the court frequently takes the diverſion of hunting.

THE room, in which the king dines in public, has a very fine cieling, and noble pictures, repreſenting Temperance, Fortitude, Juſtice, and Prudence; and the other rooms are likewiſe adorned with paintings.

IN the largeſt room of this palace, is a chimney-piece built by Henry IV. twenty-three feet high, and twenty wide, adorned with four lofty Corinthian columns of ſpotted marble, with the baſes and capitals of white marble. In the midſt of the chimney-piece is a table of black marble, on which ſtands an equeſtrian ſtatue of that prince, and underneath are two baſſo relievos, one repreſenting the ſurrender of the city of Mante, and the other the battle of Ivry. Two marble ſtatues, repreſenting Loyalty and Peace, ſtand on each ſide of this figure; and facing the chimney is a noble Theatre.

THE galleries of this palace are very fine. Among the reſt a Stag-gallery along the orangery is worthy of particular notice, on account of its being adorned with views of all the royal palaces, between which are ſtag's-heads ſet off with branches of a very uncommon ſize. Under each ſtag's head is an inſcription, ſhewing in what wood, and by what king, the ſtag was killed, many of them being introduced ſpeaking, and politely ſaying, "King Charles, Henry, or Lewis, did me the "honour of taking me." In the gallery of Diana, is the picture of Henry the Great in a hunting-dreſs; and the different kinds of hunting in which he delighted are repreſented in ſeveral paintings, twelve feet high, and twenty broad.

NEAR

NEAR this gallery is a large and beautiful Aviary, ninety feet in length, and nine in breadth. In the middle is a large dome, under which is an artificial rock made of ſhell-work, from which iſſues ſeveral ſprings, the water running through many little channels made in the ſtone pavement along the whole aviary.

THE garden is adorned with ſtatues and fountains, the largeſt of which is in the midſt of the garden, and called the Fountain of the Tiber, from that river being repreſented in braſs. Beyond it are a grotto and caſcades; and at the entrance of the park is a fine canal, ſix hundred fathoms long, and twenty broad; it is all lined with ſtone, and has a fountain at each end.

THE palace of Muden ſtands in the midſt of a foreſt, about five miles to the ſouth-eaſt of Paris, and has a noble avenue leading to it, three quarters of a mile in length. At the entrance of the court is a large pile of buildings on the right, and another on the left, which open in the form of a ſemicircle, but are disjoined from the body of the houſe. In the middle of the front is a lofty advanced building, entered by three doors, and above it runs an order of architecture, conſiſting of arches and columns finely deſigned. Above them is another order, accompanied with pilaſters. The wings are not ſo high as the principal building, and each of them is terminated by a ſquare pavilion. The front, towards the garden, alſo conſiſts of a lofty advanced building, with wings conſiderably lower, which terminate on the right and left in two pavilions of the ſame height as the body of the building. The inſide of this palace is adorned with a fine collection of ſtatues, paintings, medals, and other antiquities. The gardens are much admired for their fine walks, parterres,

terres, and water-works; and adjoining to them is a ſpacious park encompaſſed with a brick wall, and adorned with woods, baſons, and reſervoirs of water. Theſe woods are cut through, in order to form beautiful avenues; among which is one diſtinguiſhed by the name of The Dauphin, which leads to the gates of Paris.

WE ſhall now proceed to the deſcription of a ſtructure of a very different kind, but too remarkable to be omitted, viz. the famous Bridge over the Rhone at St. Eſprit in Languedoc, which is reckoned one of the fineſt in Europe. This bridge is of ſtone, and of a great length, conſiſting of twenty-ſix arches, whoſe feet or piers are ſecured by two pedeſtals that ſurround them, which have their projectures, like rows of ſteps or ſtairs, the lowermoſt projecting moſt, the others leſs by degrees. Above theſe are ſeveral windows or ſmall arches, which divide the feet of the great ones, and reach as low as the plane of the uppermoſt pedeſtal. As the Rhone is a very rapid river, this bridge is admirably contrived to withſtand its violence; for the unequal juttings of the pedeſtals ſerve gradually to break the force of the ſtream, and when the flood ſwells ſo high as to cover them, (which it frequently does) the ſmall arches or openings in the piers give a free paſſage to the water, which might otherwiſe endanger the fabric. Beſides, the bridge is not ſtrait, but bent in ſeveral places, forming unequal angles, which are greateſt where the current is ſtrongeſt, and thereby its fury is oppoſed and broken *. Dr. Smollet,

* The bridge at Lyons, over the ſame river, has an angle in the middle pointing towards the ſtream, the better to reſiſt its violence; and this contrivance is to be obſerved in ſome other bridges. It is ſaid the great pier in the middle of London bridge was intended to keep the whole fabric ſteady, and to ſupply the want of ſuch an angle.

mentioning

mentioning this bridge, obſerves, it is a great curioſity, from its length, and the number of its arches; but theſe arches are too ſmall; the paſſage above is too narrow; the whole appears to be too ſlight, conſidering the force and impetuoſity of the river; and that it is not comparable to Weſtminſter-bridge, either for beauty or ſolidity.

THE Bridge of Boats at Rouen is a curioſity that deſerves to be mentioned, with which we ſhall conclude this article. It is about 260 yards long, paved with ſtone like a ſtreet, and riſes and falls with the tide, or as land-waters ſwell the river. Carriages with the greateſt burdens paſs over it with ſafety, the boats being very firm, and well moored with ſtrong chains; but it is now grown old, and requires a great deal of money to keep it in repair.

ARTS, MANUFACTURES, INVENTIONS, &c.

THE care and application of the French miniſters to promote the Manufactories of their country, and turn every article of their commerce to the national advantage, is very remarkable, and worthy of imitation. It was M. Colbert, that great encourager of the mechanical as well as liberal arts, who prevailed with Lewis XIV. to eſtabliſh the manufactory of the Gobelins* at Paris, for the making of tapeſtry and other furniture for the uſe of the crown. The Louvre, the Tuileries, and other royal palaces, being compleated under

* The houſe where this manufactory is carried on belonged to two brothers, Giles and John Gobelyn, who firſt brought to Paris the ſecret of dying that beautiful ſcarlet colour ſtill known by their name; and Lewis XIV. having purchaſed this houſe to ſet up the tapeſtry manufacture, he gave it, by an edict, the name of Hotel Royal des Gobelins.

the

the direction of that minister, he began to think of making furniture suitable to the grandeur of those buildings, and with this view he got together the ablest workmen from all parts of the kingdom, particularly painters, tapestry-makers, sculptors, goldsmiths, embroiderers, &c. and by offers of money, pensions, and privileges, he invited others from foreign nations. Having persuaded the king to purchase the house of the Gobelins for them to work in, he drew up a system of laws for their regulation and encouragement, one of which prohibited the importation of tapestry from any other country. Ever since this manufactory was set on foot, it has been the most celebrated of the kind in Europe, having produced such a quantity of the finest work, and such a number of excellent workmen, as is almost incredible; and in effect, the present flourishing condition of the arts and manufactures of France is in a great measure owing to this establishment. Their particular glory is their beautiful tapestry, which they have made to a degree of perfection, not inferior to what was anciently done by the English and Flemish *. The battles of Alexander, the four Seasons, the principal actions of Lewis XIV. done from the designs of M. Le Brun, with other fine pieces which this manufactory has

* The invention of tapestry seems to have come from the Levant, being probably learnt there by the English and Flemish in some of the croisades or expeditions against the Saracens. Be this as it will, it is certain those two nations, especially the English, were the first who set on foot this noble manufacture in Europe; so that if they are not allowed to be the inventors, they have at least the honour of introducing amongst us so curious and admirable an art, as gives a kind of life to wool and silk, not to be exceeded by the finest paintings.

produced,

produced, are ſome of the nobleſt ornaments of the royal palaces.

THE French have alſo conſiderable manufactories of tapeſtry at Aubuſſon, Felletin, and Beauvais; and at Arras in Artois they are noted for their fine tapeſtries, commonly called Arras Hangings: but of all the Flemiſh manufactories, thoſe of Bruſſels and Antwerp are the beſt, where they ſucceed wonderfully either in human figures, in animals, or landſcapes, and that both with reſpect to the workmanſhip and the deſign.

THERE are two kinds of tapeſtry, one of the High Warp, the other of the Low Warp; tho' the difference is rather in the manner of working, than in the work itſelf, the looms of the former being upright, whereas thoſe of the latter are flat or parallel to the horizon. The loom for tapeſtry of the High Warp conſiſts of four principal pieces, viz. two upright planks or cheeks, and two thick beams or rollers placed acroſs them, the one at top, the other at bottom, about a foot from the ground. The warp, which is a ſort of worſted or twiſted woollen thread, is wound on the upper roller, and the work, as faſt as it is wove, is wound on the lower. When the loom is mounted with its warp, the pattern or deſign to be repreſented on the tapeſtry is placed cloſe behind it, and on the fore-ſide of the warp (*i. e.* that which is to be the right ſide of the piece) the contours or outlines are drawn with a black-lead pencil, ſo that the ſtrokes appear both before and behind. This done, the pattern is wound on a long ſtaff, and hung up behind the workman, who unrolls a piece of it from time to time as the work proceeds. Every thing being prepared, the workman places himſelf on the wrong ſide of the piece, and with a broach or ſhuttle paſſes the ſilk, worſted,

or

or other materials of the woof between the threads of the warp, which he brings acroſs each other with his fingers, and ſtrikes the woof cloſe with a comb of wood or ivory. Thus he proceeds, changing his colours according to his pattern, and now and then going to the other ſide of the loom to view his work, and correct the contours by preſſing them cloſer with a needle, if there be occaſion.—This manner of weaving tapeſtry is very tedious, and is therefore almoſt every where laid aſide *.

THE frame for the low warp (which is the method now chiefly in uſe) is much like a weaver's loom, conſiſting of two ſtrong pieces of wood which form the ſides, and bear a roller at each end, on the farther whereof the warp is wound, and the work, as it advances, on the nearer. The deſign or painting to be imitated by the workman is placed underneath the warp, ſo that he can ſee the figures through it; and being ſeated on a bench before the loom, he takes a flute, as it is called, (which does the office of a ſhuttle) mounted with ſilk or worſted of ſuch a colour as his piece requires, and having paſſed it among the threads of the warp, which he raiſes or lowers by means of treddles, &c. he beats the woof cloſe

* M. Le Blon contrived a new way of weaving tapeſtry in the loom with a draw-boy, which may be performed almoſt as expeditiouſly as fine brocades; for when the loom is once ſet and mounted, any common draught-weaver, tho' not acquainted with drawing or painting, nay, hardly knowing what figure he is about, exactly produces what the painter has repreſented in the original pattern: and thus a piece of tapeſtry may be wove in a month or two, which in the common way of working (almoſt as tedious as needle-work itſelf) would take up ſeveral years; and what has uſually coſt a thouſand pounds may by this means be afforded finer and better for a hundred.—See Phil. Tranſ. No 419.

with

with the reed or comb, which has usually teeth on each side, and is made of wood or ivory as above mentioned.—One thing is very remarkable in the weaving of tapestry, viz. that it is all wrought with the wrong side towards the workman, who in this last method of working does not see the right side of his piece till it be finished and taken off the loom.

AMONGST the other manufactures of France, that of silk is one of the most considerable, tho' not so flourishing as it has been formerly. When the manufactures of Lyons were in their greatest prosperity, it was computed that eighteen thousand looms were employed in weaving silks in that city and its neighbourhood; but in the year 1698 the number was reduced to about four thousand. Lyons however is still noted for its silk manufactures, particularly its taffeties, which are remarkable for their fine lustre. Octavio May, of Lyons, is said to have first discovered the method of giving taffeties this beautiful gloss, the occasion of which is thus related. Octavio, going backwards in the world, was one day musing on his misfortunes, and happened to have in his mouth some hairs of silk, which he kept chewing till his reverie was over. Upon spitting out the silk it seemed to shine, which engaged his attention, and led him to reflect on the reason. After a good deal of thought he concluded, that the lustre of the silk must proceed first, from his having pressed it between his teeth; secondly, from its being wet with his saliva, which had something glutinous in it; and, thirdly, from its having been heated by the natural warmth of his mouth. By a proper use of these observations, he found out the means of producing the same effect upon the next taffeties he made, and thereby soon acquired vast

vaſt riches to himſelf, and to the city of Lyons the reputation it ſtill maintains, of giving a better gloſs to taffeties than any other city in Europe.

THE machine invented by Octavio for this purpoſe is much like a ſilk loom, having a beam at each extremity, between which the taffety is ſtretched to take the gloſs or luſtre. This is given it by rubbing it gently with a liquid preparation as it is rolled from one beam to the other, whilſt at the ſame time it is dried by a charcoal fire placed on a carriage underneath it. The gloſs is given to black taffeties by beer and orange-juice boiled together; but for coloured taffeties they uſe gourd-water diſtilled in an alembic.

WITHIN leſs than a century paſt the French have greatly improved their woollen manufacture, which is chiefly owing to the inſtructions of foreigners who have ſettled amongſt them, and the clandeſtine exportation of wool from England. In the year 1665 Mr. Van Robets, a Dutchman, ſet up a manufactory of woollen cloth at Abbeville in Picardy, which ſucceeded ſo well, that the cloths made there are ſaid to be little inferior to thoſe of England or Holland. Lewis XIV. gave great encouragement to this manufactory, granting Robets and his people ſeveral privileges, and particularly the liberty of importing whatever was neceſſary for their purpoſe without paying any duty.—Abbeville is alſo conſiderable for its manufactures of linen, ſail cloth, ſoap, and fire-arms. — And having mentioned linen, we ought not to forget the curious manufacture of fine lawn, called Cambrick, from Cambray, the capital of a province in the French Netherlands, which is hardly to be equalled in any part of Europe.

TOWARDS the end of the laſt century the French made a great improvement in the glaſs manufacture, by inventing a method to caſt very large plates, till then unknown, and ſcarce practiſed yet by any but themſelves and the Engliſh. The invention is owing to the Sieur Abraham Thevart, who firſt propoſed it to the court of France in 1688, where he met with the encouragement he deſerved. By this method (which is ſomething like the caſting of ſheet-lead among the plumbers) we are not only enabled to make looking-glaſs-plates of more than double the dimenſions of thoſe made the Venetian way of blowing, but alſo to caſt all ſorts of mouldings, borders, and other ornaments. The chief, if not the only manufactory of this kind in France, is at the caſtle of St. Gobin, three leagues from Laon, where the number of furnaces, forges, work-houſes for ſmiths, carpenters, &c. together with apartments for theſe and other workmen employed about the glaſs, appear more like a town than a manufactory.

THE melting-furnaces uſed in this manufacture are of a vaſt ſize, and thoſe for annealing the glaſſes when formed are ſtill larger. Round a melting-furnace there are at leaſt twenty-four annealing furnaces or ovens, which are called carquaſſes, each having two tiſſarts or apertures to throw in fuel, and two chimnies; and beſides theſe, there are furnaces for making frit*, and

* This name is given to the matter or ingredients whereof glaſs is to be made, when calcined or baked in a furnace, after which they are more readily melted and turned into glaſs. The materials uſed in the compoſition of glaſs are ſalt, and ſand or ſtone. The ſalt is of the fixed kind, ſuch as will not evaporate with the moſt intenſe heat; and is procured

and calcining old pieces of glaſs. The inſide of the furnaces is made of a ſort of earth that is able to ſuſtain the action of the fire, and the melting-pots and ciſterns are made of the ſame. Theſe pots are as big as hogſheads, containing above two thouſand weight of metal; ſo the workmen call the melted matter of which the glaſſes are formed. The ciſterns are much ſmaller, and ſerve for the conveyance of the liquid glaſs, which is taken out of the pots, to the caſting-table. Such is the violence of the fire, that the furnaces are repaired every ſix months, and ſeldom laſt longer than three years, being then rebuilt from top to bottom. — When the furnace is heated to a proper degree, they fill the pots with materials, which is done at ſeveral times to facilitate the fuſion; and when the matter is melted, ſettled, and refined, which is commonly in four and twenty hours, they fill the ciſterns with it in the ſame furnace, where they let them

cured chiefly from the aſhes of a plant called Kali, glaſs-weed, or ſalt-wort, which grows plentifully in Egypt and Syria, and alſo on the coaſts of Provence and Languedoc. The ſalt extracted from the aſhes of a ſpecies of kali growing about Alicant in Spain is reckoned the beſt, and is uſed in making the plate-glaſs here deſcribed. The aſhes of fern alſo yield a ſalt that makes excellent glaſs; and thoſe of bean-ſtalks, coleworts, brambles, ruſhes, and many other plants, may be uſed for the ſame purpoſe.—As to ſtone, the other ingredient in glaſs, the beſt is that which will eaſily melt, is white, and tranſparent; and this is found principally in Italy, being a ſort of marble called Tarſo. Nothing indeed makes finer and clearer glaſs than flint, but it is ſeldom uſed becauſe of the charge of preparing it. The preparation neceſſary for ſtone is to calcine, powder, and ſift it; but where proper ſtone cannot be had, ſand is uſed, which is to be well waſhed, and needs no other preparation. Our glaſs-houſes are furniſhed with white ſand for their cryſtal glaſſes from Maidſtone, and with a coarſer ſand for green glaſs from Woolwich.

remain

remain about six hours longer, till they appear all white with the excessive heat. By means of pullies and a large iron chain the cisterns are raised out of the furnace, and placed upon a sort of carriage, whereby they are conducted to the table where the glass is to be run. This table or mould is of pot-metal, about nine feet long, and broad in proportion, having iron rims or rulers on the edges of it, which being moveable, so as to be set closer or farther apart at pleasure, determine the width of the glasses. Upon these rulers rest the extremities of a brass roller, by means of which the burning liquid, when poured upon the table from the cistern, is equally spread from one end to the other, and rendered of an uniform thickness. When the glass is come to a proper consistence, they shove it off into the annealing furnace, and so continue casting other plates till the pots of metal are exhausted; removing the table from one annealing furnace to another, as fast as they are filled, where the plates remain ten days or longer, and by the gradual decrease of the heat they are equally consolidated in every part. It is really surprizing to behold with what quickness and address the workmen go through this dangerous business, how they raise the cisterns full of flaming matter out of the furnace, convey them to the table, pour out the fiery torrent, spread the glass, &c. In short, the whole is inconceivable to such as have not been eye-witnesses of this wonderful manufacture.

THEIR manner of heating the furnaces is so singular that it deserves to be mentioned. The person employed in doing it runs round the furnace as fast as he is able, throwing into each aperture, as he goes along, a billet or piece of wood cut for that purpose; and this course he

continues for a certain number of hours, at the end of which he is relieved by another. This conſtant and regular ſupply of fuel keeps the furnace to a proper degree of heat, which is ſuch, that a large bar of iron laid at one of its mouths becomes red-hot in leſs than half a minute *.—It is computed that one of the melting-furnaces, before it is fit to run glaſs, coſts above three thouſand five hundred pounds; that three months are required to repair it, and ſix at leaſt to build it anew; and that when a pot of metal burſts in the furnace, the loſs of matter and time is more than two hundred and fifty pounds.

As we are now ſpeaking of glaſs, it may not be amiſs to take notice of one of its moſt remarkable properties, viz. its ductility; for it may be drawn or ſpun out into long threads, to a degree of fineneſs almoſt incredible. We have of them in the plumes of childrens caps, and divers other works, much finer than any hair, and which bend and wave with every breath of wind. In the ſpinning of glaſs two operators are employed, one of whom holds the melted metal over a lamp, from which the other draws a thread with a hook, and having faſtened it on the rim of a wheel, he turns it ſwiftly round till he has ſpun out the

* Of all the effects of fire on natural bodies, that of changing them into glaſs is one of the moſt ſurprizing. The chymiſts hold, that there is no body but may be vitrified, i. e. converted into glaſs; even gold itſelf may be ſo changed by the intenſe heat of the ſun's rays collected in a large burning-glaſs. And as vitrification is the effect of fire, ſo it is the laſt effect; its utmoſt force not being able to carry the change of a body any farther. Whence Dr. Merret mentions it as a merry ſaying of a great artiſt in the buſineſs of glaſs, That their profeſſion would be the laſt in the world; for that when the univerſe ſhould be conſumed by fire, all things therein would be turned to glaſs.

maſs

maſs from whence the thread is drawn. Thus this brittle matter becomes ſurprizingly flexible, which is always in proportion to its fineneſs; and the threads of glaſs may be ſpun as ſmall as that of a ſilk-worm, or even thoſe of a ſpider's web.

THIS naturally leads us to conſider the amazing ductility of gold, which exceeds that of all other bodies, of which the gold-beaters and gold-wire-drawers furniſh us with abundant proof, and perhaps none are more curious in theſe works than the French artificers, or have made nicer obſervations on this ſubject than the philoſophers of that nation.—A gold-beater, having melted a quantity of fine gold, beats it on his anvil into a plate as thin as paper, and then cuts it with his ſheers into little pieces about an inch ſquare. Theſe he puts between the leaves of a ſort of book made of vellum, and with a hammer beats them on a marble block, till they are ſtretched out nearly to the ſize of the book. He then takes them out, cuts them in four, and puts them into another book to be farther extended. When they are brought to a certain degree of fineneſs in the two firſt books, they are again cut into four, and made to undergo the ſame hammering in two others, which, as well as the former, are called moulds; but the leaves of theſe, inſtead of vellum, are made of ox-guts well ſcoured, and prepared for that purpoſe. The leaves of gold being beaten to the thinneſs required, which is greater or leſs, according to the uſe it is intended for, are diſpoſed in little paper-books, prepared with red bole for the gold to ſtick to, and thus are kept for ſale.—By this operation an ounce of gold is beat into a ſurface of 146 ſquare feet; and it has been computed, that the thinneſt parts of

ſome gold-leaves are ſcarce one 360,000th part of an inch thick.

BUT the diſtenſion of gold under the hammer (how conſiderable ſoever) is far ſhort of what it undergoes in the drawing-iron. What we call gold-wire is made of a cylindrical ingot of ſilver, uſually about two feet long, and two or three inches round, which being covered with leaf-gold, is ſucceſſively drawn through the holes of ſeveral irons, each ſmaller and ſmaller, till it be as fine or finer than a hair of the head. The ingot paſſes through a hundred and forty or fifty holes before it is brought to its utmoſt fineneſs, every new hole leſſening its diameter; but then it gains in length what it loſes in thickneſs, and conſequently increaſes in ſurface; yet the thin covering of gold ſtill follows the ſilver in all its extenſion, and never leaves the minuteſt part bare, even to the microſcope. M. Reaumur, who has been very curious in his calculations relating to the ductility of gold *, obſerves, that an ingot or roll of ſilver weighing thirty pounds, about an inch and a half in diameter, and twenty-two inches long, is uſually covered over by the wire-drawers with two ounces of leaf-gold, and ſometimes with little more than one; ſo that the thickneſs of the gold ſeldom exceeds a five-hundredth

* Merſenne, Furetiere, Rohault, Dr. Halley, and others, have likewiſe made calculations on this ſubject, but M. Reaumur ſeems to have carried the matter to the greateſt length. Dr. Halley computed, that two yards of ſuperfine wire weighed a grain, and that ninety-eight yards of it were covered by a ſingle grain of gold. The diameter of ſuch wire he found to be one 386th part of an inch, and that the thickneſs of the gold was not above the 134,500th part of an inch; but this is far ſhort of M. Reaumur's computation, as the reader will obſerve.

part

part of an inch, and ſometimes not a thouſandth. The ſame ingenious gentleman found, by exact weighing, and the moſt accurate computation, that an ounce of the fine wire drawn from ſuch an ingot covered with two ounces of gold, was 3232 feet long, and conſequently the whole ingot, 1,163,520 feet, Paris meaſure, which are equal to 1,264,400 Engliſh feet, or 240 miles. But this is not all; for the greateſt part of our gold-wire is ſpun or wound on ſilk, in order to which it is preſſed flat between two rollers of well-poliſhed ſteel, and by this preſſure it is lengthened above one ſeventh; ſo that inſtead of 240 miles we may now reckon 274. The breadth of this thin lamina, or flatted wire, is a 96th part of an inch; and by calculation it appears, that the ounce of gold is thus ſpread into a ſurface of 1190 ſquare feet, whereas, by the gold-beater's, hammer, it is only extended to 146, as before obſerved.—How inconceivably thin muſt the gold be in this prodigious extenſion! M. Reaumur found it to be one 2,100,000th part of an inch; but this computation ſuppoſes the thickneſs of the gold to be every where equal, which is not the caſe, for the leaves being thinner in ſome places than others, the gilding on the wire will be ſo likewiſe; and therefore that gentleman computes the gold, where thinneſt, to be only one 3,150,000th part of an inch. Yet this is not the utmoſt ductility that gold is capable of; for if inſtead of two ounces to the ingot (upon which this computation is founded) one only were uſed, the thickneſs of the gold would then be no more than the 6,300,000th part of an inch in the thinneſt places. As amazing as this appears, the gold may ſtill be reduced to much more exceſſive thinneſs by repeating the preſſure between the ſteel-rollers,

and yet remain a perfect covering for the silver, so that the best eye, even assisted by the best microscope, (as we have observed above) cannot discern the least chasm or discontinuity.

BEFORE we take leave of France, we ought to give some account of the Sea-Salt made in that country, which yields a vast revenue to the king *, and is a very considerable article of its commerce, more being made there than in all Europe, or perhaps in all the world besides. There are two kinds of this salt; the one, which receives its consistence from the heat of the sun, called Bay Salt from its browniſh colour; the other called White Salt, which is boiled over a furnace. The first manner of preparation is used where the sea-coast is flat and low, the latter where it rises in downs or hills of sand. The most noted coasts for bay salt are those of Britanny, Saintonge, and Aunis, especially the first, there being reckoned in the bay of Bourgneuf alone above twenty thousand salt-works. The white salt is made chiefly on the coasts of Normandy.—The manner of making bay salt, is by letting the sea-water into several square pits or basons, the bottoms whereof are

* The Gabelle or duty on salt is said to have had its rise in France in 1286, under Philip the Fair; after which it was from time to time augmented by succeeding princes, till at length Philip of Valois established granaries and officers of the Gabelles, prohibiting all other persons from selling salt: and since this the whole commerce of salt, for the inland consumption, has lain wholly in the king's hands, who sells it by his farmers and officers created for that purpose. When the proprietors of the salt-works have delivered to these officers the quantity they are obliged to do, they sell the rest to foreigners, particularly the northern nations. It is computed, that the impost on salt make one fourth of the revenue of the kingdom, and yields the crown more than the king of Spain receives from all the rich mines of his American dominions.

well

well rammed, and which have a communication with each other by little channels, through which the water is admitted to the height of five or six inches, after having rested two or three days in larger and deeper reservoirs; and then the sluices being shut, the work is left to the wind and sun. The season for this business is usually from the middle of May to the end of August, when the sun's rays being strongest, the salt is best raised and crystallized. The water at first thickens imperceptibly, and at length becomes covered with a thin crust, which hardening by the continuance of the heat, is wholly converted into salt. This crust they break with poles or rakes, and the flakes of salt fall to the bottom of the water, which is then found to be exceeding hot. The flakes being raked out, are left for some time in heaps about the edge of the pit, till they are completely dry, and fit to be pulverized. And this brown salt is usually sold without any farther preparation, though indeed in some places they make it white by refining, that is, by boiling it in large cauldrons. But the white salt of Normandy is not made by refining the bay salt, being extracted from a muddy sand on the flats of the shore, which the tide every day covers and impregnates with its waters. This sand is gathered and removed into pits, where the water drains from it through straw laid at the bottom, and runs into vessels set to receive it. Of this water the salt is made by boiling it, after which they let it stand in baskets to purify, where it drains itself of the moisture that remained, and when dry is carried to the magazines.

GREAT quantities of sea-salt are exported from France in time of peace by the English and Dutch, who, when at war with the French, endeavour to

supply themselves from Spain and Portugal; but the salts of these countries have a disagreeable sharpness, and are not so fit for salting flesh or fish as those of France, unless they are softened and corrected. The salt of Guerande in Britany is preferred by the English as the best and whitest; but that of Bourgneuf, though browner and heavier, is most used in France, and also throughout the Baltic, particularly in Poland, where they use it to manure the ground which it warms, and preserves the grain from being gnawed by vermin*.

OF all the works undertaken by the French, or by any other nation, for the advantage of trade and navigation, there is none more surprizing than the Royal Canal of Languedoc, which is above a hundred miles in length, and was cut in the last century with prodigious expence and labour, to make a communication between the Ocean and the Mediterranean, so that merchan-

* The matters used for manure are various in various countries; the most common are dung, lime, and marle. In the south-west part of Devonshire they manure their land with a brackish sea-sand, which, according to Dr. Bury, quickens dead land, so that what would otherwise be the barrenest part of the country, is now the richest. The sea-salt, he observes, is too strong and active of itself, but does very well when mingled with lime. Glauber directs the mixture to be made up with water, and burnt like bricks for about two hours; which compost, he says, will enrich the poorest land. It has been observed, that the ground about Nantwich, where salt or brine is spilt, when dug up, is an excellent manure for pasture land; and even bricks thoroughly tinged with it dissolve and fertilize the land very considerably. In some parts of Ireland they use sea-shells, as those of cockles, periwinkles, &c. which are found to agree well with heathy, clayey, and boggy land; and the shells being hard, melt away slowly, so that the manure need not be repeated for twenty or thirty years. These shells have been likewise used in the flower-garden with great success.

dize

dize might be tranſported from one ſea to the other, without the neceſſity of ſailing round the coaſts of Spain and Portugal through the ſtreights of Gibraltar. This was a convenience much wiſhed for, and the deſign was ſeveral times thought of in the reigns of Charles the Great, Francis I. and Henry IV. but was never put in execution till the reign of Lewis XIV. M. Riquet, an excellent engineer, had the direction of this great work, which was begun in 1666, and finiſhed in 1681. By ſurveying the ground, it was obſerved, that the hill of Narouſe was the propereſt place to make a baſon or reſervoir of water, which was to be conveyed by one channel towards the Mediterranean, and by another towards Toulouſe, where the river Garonne begins to be navigable. This ſpot of ground is ſix hundred feet higher than the level of the two ſeas, but there being only one ſpring near it, and that very inſufficient to furniſh a requiſite body of water for the purpoſe, M. Riquet formed a vaſt reſervoir among the neighbouring mountains, from whence the water is brought by an aqueduct to the baſon of Narouſe, which is 1200 feet long and 900 broad, and thus never fails of a ſuppiy in the drieſt ſummers. From this baſon the canal runs eaſtward to the port of Cette in the Mediterranean, and weſtward to the city of Toulouſe, where it joins the Garonne, which river falls into the Ocean in the bay of Biſcay.

In the execution of this work prodigious difficulties were ſurmounted, the unevenneſs of the ground, the mountains, rivers and brooks, which croſſed the way, ſeeming to render it utterly impracticable. In ſome places the canal is carried over vallies and rivers by lofty aqueducts, and in others they have cut a paſſage for it through rocks

and mountains. Above a hundred ſluices have been contrived, by which the water is confined, and the veſſels thereby raiſed from one height to another in a ſurprizing manner. Theſe ſluices conſiſt of thick walls running parallel to each other, at the diſtance of about thirty feet, with ſtrong gates at each end to let the water in and out as there is occaſion. To give the reader an idea of their uſe, let us ſuppoſe a bark to enter the canal from the Mediterranean, and having ſailed through that part of it which runs along the plain, to arrive at the foot of one of theſe ſluices. Immediately the gates are opened, and the water ruſhing out, forms one common level with that which is below. The veſſel being drawn in, the gates are ſhut again, and the upper ones being opened, the water flows in, and riſes by degrees, till the bark is mounted conſiderably higher than it was before. Then proceeding to the ſecond ſluice, it aſcends in the ſame manner, and ſo from one to another, till it arrives at the baſon of Narouſe above-mentioned, from whence it is conveyed down to Toulouſe by the ſame ſort of locks or ſluices.—We may eaſily conceive what vaſt ſums this canal muſt have coſt before it was compleated, and what a conſtant charge muſt attend the keeping it in repair; and yet we do not find that it ſufficiently anſwers the purpoſe for which it was intended, the great number of ſluices rendering the navigation of it both tedious and expenſive.

THERE are other works of this kind in France, which, by uniting the navigable rivers, are of great advantage to the inland trade of the kingdom. The canals of Briare and Orleans, next to that of Languedoc, are the moſt remarkable, having ſeveral ſluices like thoſe already deſcribed.

By

By theſe canals a communication is opened between the Seine and the Loire, whereby Paris is eaſily furniſhed with the productions of the interior parts of the kingdom, as well as the merchandize of Nantes in Britanny, and a reciprocal traffick carried on between the northern and ſouthern provinces.

HAVING mentioned Nantes, it ſeems proper to take notice of its excellent Brandy *, eſpecially as that liquor makes no inconſiderable article in the French commerce. The brandies of Nantes and Cognac are eſteemed the beſt in France, being of a better flavour, finer and ſtronger, and enduring the bubble-proof longer than any of the reſt †. A great number of foreign veſſels return from the ports of France chiefly laden with brandy, though the Dutch take off almoſt as much as all the reſt of Europe. It is computed, that near 200,000 gallons are annually exported from the city of Nantes alone, and above twice that number from Bourdeaux.—As to the wines of France, their reputation is well known; and as we have

* Brandy is a ſpirit drawn from wine by ſimple diſtillation, and brandy purified by a ſecond or more diſtillations, is what we call Spirit of Wine rectified. The chief uſe of brandy is as a drink, eſpecially in the northern countries of Europe; the ſavages of Canada, and other parts of North America, are extremely fond of it; and the negroes of Guinea will ſell one another for a few bottles. It is alſo of ſome uſe in medicine, being ſaid to ſtrengthen the nerves; and the rectified ſpirit is uſed in dying.

† The beſt brandy is that which is white, clear, of a good taſte, and will bear the teſt or proof, *i. e.* upon pouring it into a glaſs, a little lather or froth will be formed at the top of it, which, as it diminiſhes, makes a circle, called by the French merchants the Chapelet, and by the Engliſh the Bead or Bubble; there being no brandy but what is well dephlegmated, ſo as to retain no ſuperfluous humidity, whereon the bead will be entirely formed.

already described the manner of making them, we shall only add, that besides their vast consumption at home, great quantities are exported to other countries.

THUS we have given as full an account of what is most remarkable in France, as our limits will permit, and now proceed to give a concise account of the manners of its inhabitants.

Of the FRENCH.

THE French are, in general, slender, well proportioned, nimble, and active; their hair and eyes are, for the most part, black: they have usually a brown complexion, and the ladies are fond of colouring their cheeks with red, by which means those to whom nature has given an agreeable complexion, are mingled with the ladies who want that advantage. The common people are, in general, fond of appearing with a superficial splendor, and, considering their circumstances, are extravagant in point of dress, though, with respect to provisions, they live as meanly as possible.

THE people are usually merry, remarkably talkative, and extremely vain. The climate naturally gives them good spirits, and they seldom lay any thing to heart. Impartiality must confess, that they are not destitute of personal courage, and that they have distinguished themselves with great bravery on many occasions; nor do they want genius; their skill in the arts has distinguished them throughout Europe; and the knowledge of the learned in some of the sciences has done honour to their country.

THE bulk of the people in France know how to live very hard; they are far from eating the same quantity of flesh as the English, nor is it usual

uſual to dreſs it in the ſame manner; for ragouts, fricaſees, haſhes and ſoups, diſguiſed with onions, herbs, roots, and ſpices, are preferred before joints of roaſted or boiled meat; and what they do roaſt or boil, is done ſo much, that ſcarce any gravy is left. As the fleſh of their cattle is leaner and more ſtringy than ours, they keep it for ſome time, not only to make it leſs tough, but to improve the taſte, the dryneſs of the air preſerving it from that diſagreeable muſtineſs which ſtale meat acquires by the dampneſs of our climate. They are exceſſively fond of ſoup, and of a diſh made of the hind-legs of frogs; and uſually eat twice the quantity of bread that we do: indeed it is generally exceeding light and good. They are ſtrangers to the fine fat ſurloins and buttocks of beef which grace the tables of our tradeſmen in middling circumſtances, and are entirely unacquainted with the many agreeable Engliſh diſhes, called by the general name of Puddings. The wealthy, however, have their tables ſupplied with a number of luxuries of other kinds, and particularly ſweet-meats; but the poor mechanics, and all the laborious part of the nation, live almoſt entirely on bread, ſoups, and vegetables. In Lent, the people live much upon white kidney-beans, that is, the ſeed boiled, and on white lentiles, a kind of pulſe unknown in England; and on a variety of ſallads, ſome of which are to be found growing wild in almoſt every field.

THE women, in general, behave without reſerve; and the men are ſo little addicted to jealouſy, that it is good manners to commend the beauty of a woman, even before her huſband's face.

THE French now pride themſelves on their loyalty, and the profound veneration paid to their prince; but it muſt be acknowledged by thoſe who have

have read their hiſtory, that while they had any thing to contend for, rebellions and civil wars were as frequent in France as in any other country. They had once the privilege of making their own laws, but their privileges have, for ſome time, been ſwallowed up by the prerogatives of the crown; and their parliaments are of little uſe, with reſpect to their legiſlative authority, except in regiſtering the edicts of the ſovereign, which they indeed ſometimes remonſtrate againſt in a very brave and ſpirited manner, and preſent their petitions to have them rendered more favourable to the people; but if the king continues obſtinate, all their remonſtrances are in vain, and they are at laſt obliged to ſubmit. Their lands are ſo highly taxed, that ſmall eſtates will ſcarce afford the proprietors a ſubſiſtence, who have not a place; and indeed there are few conſiderable families in the kingdom, that have not ſome preferment in the church, the court, or the army. What adds to the diſtreſſes of the people, is the cuſtom of farming the taxes, which renders it the intereſt of the farmers to levy them with the moſt oppreſſive rigour. The nobility and gentry of France think themſelves above engaging in trade, and indeed, appear naturally formed for the court and the army; and if they are of a melancholy turn, there are always convents and numerous preferments to be met with in the church. We have already obſerved, that they do not want bravery; and it ought not to be omitted, that they have brought the art of war to great perfection, there being no people upon earth who are better ſkilled in fortification, or in the attack or defence of a place.

WITH reſpect to their exerciſes, there are few Frenchmen who do not learn to dance, and few gentlemen

gentlemen who do not underſtand the uſe of the ſmall ſword, and what is called riding the great horſe. Their moſt uſual diverſions are gaming, of which they are very fond, walking, taking the air in coaches, and attending operas and plays.

CHAP. III.

Of SPAIN *and* PORTUGAL.

SPRINGS, CAVES, LAKES, *&c.*

SPAIN is ſeparated from France by a long chain of very high mountains, called the Pyrenees, which reaches from the bay of Biſcay to the Mediterranean; and from this ridge ſeveral branches extend themſelves through great part of the kingdom. Theſe mountains abound with valuable metals and minerals, and ſend forth a vaſt number of ſprings, which form many fine rivers that water the plains and vallies, and render them fertile and delightful. The mountains of Andaluſia and Granada are alſo remarkable for their mineral treaſure, and for a great variety of medicinal waters, whoſe healing virtues many have experienced. Of the hot kind, the moſt famous are thoſe of Seville, Cordoua, and Granada, which are ſaid to cure all chronical, and even venereal diſeaſes; and this is not improbable, conſidering the minerals they are impregnated with, their exceſſive heat, and the plentiful perſpiration occaſioned thereby, as well as by the warmth of the climate.—Nor is Portugal without theſe ſalutiferous fountains, having ſome of a hot, and others of a cold nature. One in particular of the former kind, about forty miles north of Liſbon, is much

much reſorted to, where an hoſpital has been built for the reception of poor patients, who are attended by a phyſician, apothecary, ſurgeon, and other attendants. The hot bath of St. Peter, in Algarve, is alſo reckoned of great virtue, and ſome others in the northern parts of the kingdom.

NEAR Antequera, in Granada, there is a ſpring, whoſe water is ſaid to diſſolve the ſtone in the bladder *, and bring it away by urine; but we may ſuppoſe this character exceeds the truth, though it may probably be of great ſervice in nephritic diſorders, by promoting a diſcharge of ſand or gravel.

IN the neighbourhood of the ſame city are ſeveral remarkable Caves, ſuppoſed to be mines formerly carried on by the Romans, and exhauſted of their precious metals.—Another rarity near Antequera, is a parcel of high rocks, which, at a diſtance, look like men, beaſts, buildings, &c. and are reckoned a wonderful work of nature.

ON the top of a ridge of mountains in Portugal, called Eſtrella, there are two Lakes of a great extent and depth, eſpecially one of them, which is ſaid to be unfathomable. What is chiefly remarkable in them is, that they are calm when the ſea is ſo, and rough when that is ſtormy; which

* How ineſtimable would this water be, were it poſſeſſed of ſo extraordinary a quality, as thus to carry off one of the moſt terrible diſeaſes in nature! There is no way of curing the ſtone in the bladder, when it is grown too large to be voided, but either by a liquor that will diſſolve or break it, ſo that it may be evacuated piece-meal, which is called Lithontriptic; or by the operation of cutting, which is termed Lithotomy. But we have yet no aſſured Lithontriptic known, ſo that the uſual cure is by making an inciſion, and extracting the ſtone out of the bladder, which there are various methods of performing. The Engliſh and French ſurgeons are famous for this curious operation.

makes

makes it conjectured, they have a ſubterraneous communication with the ocean: and this ſeems to be confirmed by the pieces of ſhips they now and then throw up, though almoſt forty miles diſtant from the ſea.—There is another extraordinary lake in this country, which uſually, before a ſtorm, is ſaid to make a frightful rumbling noiſe, that may be heard at the diſtance of eighteen or twenty miles.—And we are alſo told of a pool or fountain, called Fervenças, about twenty four miles from Coimbra, that abſorbs not only wood, but even the lighteſt bodies thrown into it, ſuch as cork, ſtraws, feathers, &c. which ſink to the bottom, and are ſeen no more.—To theſe we may add a remarkable Spring near Eſtremos, which petrifies wood, or rather covers it with a caſe of ſtone; but the moſt ſurprizing circumſtance is, that it throws up water enough in ſummer to turn ſeveral mills, whereas it is quite dried up in the winter *.

THERE is one particular related of the river Guadiana, that deſerves to be mentioned under this article, viz. That about eight leagues from its ſource, it entirely loſes itſelf under ground, and, after a ſubterraneous courſe of ſeven or eight leagues more, riſes again in a lake near a village called Daymiel. From hence it takes the name

* If we are rightly informed, there is an inſtance of this kind at Lambourn in Berkſhire, the little river that runs by it being always high in ſummer, but very low, or entirely loſt, in winter. Mr. Sylveſter, (the tranſlator of Dubartas) who lived at Lambourn many years, takes notice of it, addreſſing himſelf to the rivulet in the following lines:

All ſummer long, while all thy ſiſters ſhrink,
Then of thy waters thouſands daily drink;
But while the reſt are full unto the top,
All winter long thou doſt not ſhew a drop.

of

of Guadiana, being hitherto called Ruydera, and in its courſe ſinks twice under ground again before it falls into the ocean *.

FOSSILS.

SPAIN and Portugal abound with mountains, as we have obſerved already, whoſe bowels are furniſhed with a vaſt ſtore of divers metals and minerals, particularly iron, copper, lead, quickſilver, alum, and calamine. To ſay nothing of their quarries of marble, of which there are ſeveral ſorts, they have agate, granate, jaſper, and other precious ſtones. As to their mines of gold and ſilver, they have been either exhauſted by the Romans, Carthaginians, and other nations, or at leaſt quite neglected by the Spaniards, ſince they have been able to draw ſuch vaſt quantities of thoſe rich metals out of their American dominions. Of all the mines in Spain, therefore, thoſe are the moſt valuable which furniſh them with iron and quickſilver, of both which they have great plenty. Their iron is excellent, particularly that which is dug out of the mountains

* The burying itſelf under ground, and riſing again in another place, is not peculiar to the Guadiana, but likewiſe reported of the Nile, the Tigris, and many other rivers. Nay, we need not look abroad for an inſtance of this nature, for the river Mole in Surry ſinks into the earth at the foot of Box Hill, and after a ſubterraneous paſſage of ſeveral miles, appears again at Leatherhead; whence Mr. Pope, in his Windſor-Foreſt, calls it

The ſullen Mole, that hides his diving flood.

But ſome are of opinion, that the river which riſes at Leatherhead is really a new river, diſtinct from the Mole, though it goes by the ſame name; and no doubt but falſe conjectures and reports have been made concerning ſeveral other rivers that loſe themſelves in the ſame manner.

of

of Biſcay, whereof large quantities are ſent to moſt parts of Europe, as well as manufactured at home. Some ſay the Spaniſh iron is the beſt in the world, but the Swediſh iron has generally the preference, becauſe the Spaniſh is apt to red-ſear, (as they call it) that is, to crack between hot and cold.

QUICKSILVER, or mercury, is a mineral fluid matter, cold to the touch, of a ſhining ſilver colour, very heavy, volatile, and which will unite with moſt metals, eſpecially gold, to which it joins itſelf very cloſely. It is ſometimes found in its fluid form in the bowels of the earth, and is then called Virgin Mercury; but it is more uſually found in glebes, ſometimes very hard and ſtony, of a ruddy, yellow, or blackiſh colour; or elſe in form of a red ſulphureous mineral, called Cinnabar. To ſeparate the mercury from the ore or earth, the uſual way is to grind the glebe to powder, mix it with water, and ſtir it briſkly about till the water becomes very thick and turbid. When it has ſtood a while to ſettle, they pour off the water, ſupply its place with freſh, and ſtir and work it as before; and this is repeated, till at length the water comes away perfectly clear, leaving the mercury and other metallic and ſtony matter at the bottom of the veſſel. To this matter they add the ſcoria of iron, and diſtil it in large iron retorts, by which the mercury is ſeparated from all the heterogeneous parts. — But we ſhall ſay no more of quickſilver in this place, as we ſhall have occaſion to ſpeak more largely of it hereafter.

THE Agate (which we have ſaid is found in Spain) is a precious ſtone, partly opake, and partly tranſparent, uſually diverſified with various colours, veins, ſpots, &c. which ſometimes repreſent

preſent trees, animals, fruits, flowers, and other natural objects *. There are various kinds of agates, which have different names, according to their different colours and degrees of tranſparency; of which the ſardian and ſardonyx are the moſt valuable. The agate (eſpecially the ſardian or cornelian) has always been eſteemed for ſeals, being a ſtone that no wax will ſtick to, that graves well, and takes a fine poliſh. Several medicinal virtues have been aſcribed to this ſtone, which ſeem to be all imaginary.

THE Granate, or Garnet, as it is commonly called, is a gem of a red colour, reſembling that of the kernel of a pomegranate, from whence its name. Granates are diſtinguiſhed into oriental and occidental; the former brought from ſeveral parts of the Eaſt-Indies, the latter found in Spain, Bohemia, and Sileſia; of which laſt ſort thoſe of Bohemia are moſt valued, and by ſome preferred to the oriental kind. This ſtone, reduced to powder, and taken internally, is ſaid to cure palpitations of the heart, to reſiſt melancholy, and ſtop hæmorrhages; and ſome believe it has the ſame effect, if ſuſpended about the neck.

JASPER is a precious ſtone not much different from the agate, except that it is more opake, ſofter, and does not take ſo good a poliſh. The florid jaſper, found in the Pyrenees, is uſually

* De Boot (in his hiſtory of Gems) mentions an agate, the ſize of a man's nail, wherein a biſhop with his mitre was very well repreſented; but by turning it a little there appeared the heads of a man and woman—M. du Fay (in the Memoirs of the Royal Academy of Sciences) has given us the art of ſtaining agates with divers beautiful colours; and he afterwards obſerves, that the figures and ramifications upon theſe ſtones, whether natural or artificial, may be diſcharged with Aqua-fortis.—Mr. Boyle takes notice, that fire will purge away the colour of agate.

ſtained

ſtained with various colours, though ſome have only one colour, as red or green; but theſe are leaſt eſteemed. The green ſpotted with red is now moſt valued; in the next place that which borders on a purple colour, or that of a carnation. Almoſt the ſame virtues are aſcribed to this ſtone as to the granate, and perhaps with equal foundation.

To theſe we ſhall add another ſtone (though not of the precious kind) which is dug up in Spain, and ſeveral other parts of the world, viz. the Hæmatites, or Blood-Stone, which is a ferrugineous, ponderous, hard, metallic ſubſtance, of a red, blackiſh, and ſometimes an iron colour, and of an earthy aſtringent taſte. Some of theſe ſtones have an uneven and angular ſurface, as thoſe that are found in Spain, which are reckoned the beſt in Europe; others are cluſtered on the ſurface like bunches of grapes, as thoſe brought from the Herçynian foreſt in Germany; and others are formed like inteſtines, or the outer ſurface of the brain, in various convolutions. This ſtone, reduced to a fine powder, has been uſed in all ages to ſtop hæmorrhages, ſpitting of blood, and to dry and heal ulcers in the lungs. It is alſo found very effectual to promote the Menſes.

THE Salt-Mines in the mountains of Catalonia, belonging to the duke of Cardona, one of the richeſt grandees in Spain, deſerve to be mentioned under this article. The ſalt dug out of them is of four kinds, white, bay, red, and brilliant; which are found in diſtinct ſtrata, one above another. The firſt is like our ſea-ſalt, only it is not granulated. The ſecond is of an iron and ſlate colour, but has moſt of the qualities of the white. The third only differs from the reſt by the mixture of ſome bole or earth, which gives it the colour

colour of a roſe. And the fourth ſort, though brilliant, is tranſparent as cryſtal, which is the proper Sal-Gemmæ of the druggiſts. This laſt kind will become red-hot in the fire, like iron, but eaſily diſſolves in water; yet the druggiſts waſh it to give it the greater luſtre, but they take care to wipe it dry again immediately.

VEGETABLES.

BESIDES the internal riches of the mountains of Spain and Portugal, we may obſerve in general, that many of them are covered with ſtately trees of ſeveral ſorts either for timber or fuel; others afford a fragrant herbage that ſerves to feed a great number of ſheep and goats, and gives their milk and fleſh an exquiſite reliſh; and others furniſh the curious botaniſt with abundance of medicinal ſimples, too numerous to be here deſcribed. The vine, which grows ſo naturally in theſe warm countries, and yields the inhabitants ſuch plenty of its rich liquor, that even the pooreſt people drink it, has been ſufficiently ſpoken of in the preceding chapter. And as for their other fruit-trees, they have not only all the ſorts that either grow naturally with us in England, or which we cultivate with ſo much pains, but likewiſe many others which all our art cannot bring to perfection.

AMONGST theſe may be reckoned the Orange-tree, which grows in great abundance all over the country, wearing a continual verdure, and bearing at the ſame time a fragrant bloom of flowers, and a diverſity of fruits, ſome in their infant-ſtate, and others in their full maturity. The fruit and the tree are too well known to need a deſcription; but it is worth obſerving, that the orange-

orange-tree is one of the moſt long-lived plants in nature, ſeveral of them having been kept in gardens between two and three hundred years, and even then retained the appearance of their youthful vigour. The delicious ſort, called China Oranges, was firſt brought from China by the Portugueſe; and it is ſaid the very tree, from whence all the European ones of that kind have been propagated, is ſtill preſerved at Liſbon. The city of Seville in Spain gives name to a ſpecies of Oranges whoſe juice has an agreeable acidity, and is chiefly uſed in punch and ſauces. — The Lemon-tree, whoſe acid fruit is uſed for the ſame purpoſes as the Seville Orange, is likewiſe the produce of this country.

THE Pomegranate-tree, which bears a fine medicinal fruit, grows plentifully in Spain and Portugal, both wild and cultivated in gardens. There are two kinds, the one bearing flowers only, the other both flowers and fruit; the branches are a little prickly, and the leaves reſemble thoſe of the greater myrtle. The flowers are incloſed in a purple calyx or cup, ſhaped ſomewhat like a bell; and the fruit conſiſts of a great number of angular grains or ſeeds *, incloſed within a reddiſh pulp, and covered with a thick browniſh rind. Over this grows a ſort of crowning, of the ſame nature with the rind, formed of a production of the calyx. In general pomegranates are not only agreeable to the palate, but good for the ſtomach; and the flowers, as well as the rind and kernels, are of conſiderable uſe in medicine, being all cooling and aſtringent.

* From the abundance of theſe grains or kernels, the fruit ſeems to have received its name, q. d. Pomum Granatum, the kernelled apple; and not from Granada in Spain, as ſome have imagined.

THE

THE Almond-tree deſerves to be mentioned among the ſpontaneous productions of Spain and Portugal, though not peculiar to their ſoil, but frequent in France, Italy, Barbary, and other warm countries. It pretty much reſembles a peach-tree, bloſſoms early in the ſpring, and the fruit is ripe about Auguſt The flowers are pentapetalous, *i. e.* conſiſt of five leaves, ranged in the roſe manner; and the piſtil becomes a fleſhy fruit, containing a ſeed or kernel incloſed in a ſtone, which is the almond, and which drops out when the fruit is arrived at maturity. Almonds are of two kinds, Sweet and Bitter; the former of which are of a ſoft grateful taſte, and are reputed cooling, healing, emollient, and nutritive. The oil drawn from them by expreſſion is a ſafe and uſeful remedy in nephritic pains; and in hoarſeneſs, coughs, aſthmas, phthiſics, and all diſorders of the breaſt, it is highly beneficial. The latter ſort are ſeldom eaten, on account of their bitterneſs, but afford a proper medicine on many occaſions, being of a ſtimulating, detergent, aperient, and diuretic quality *.

IT would carry us too far to ſay much more of the vegetable productions of theſe countries; but we think it proper to take notice of an Evergreen of the oak kind, which is common enough

* Hoffman very much recommends the uſe of bitter almonds, to prevent the generation of the ſtone, for which purpoſe he would have three or four of them eaten every morning. It is ſcarce credible, he ſays, how beneficial they are in calculous diſpoſitions, ſince they expel the urine, and bring away the ſand, from whence the ſtone is produced, as he has found by frequent experience.—Some eſteem them good to be taken before drinking, in order to prevent intoxication, which is ſaid to have been the practice of the emperor Claudius: and Plutarch relates, that a certain phyſician, a great drinker, uſed to take down five bitter almonds at every cup, to allay the heat and fumes of the wine.

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in Spain, (as well as in Languedoc) remarkable for a ſort of huſk or berry called Kermes, and Scarlet Grain, found adhering ſometimes to its leaves, but generally to its ſtem or branches. It is of a ſpherical figure, as large as a pea, ſmooth, ſhining, and full of a mucilaginous juice of a beautiful red colour, of conſiderable uſe in medicine, and in dying ſcarlet. After the moſt diligent enquiries of naturaliſts into the production of this grain, it is found to be the neſt of a ſmall inſect or worm, which pricking the bark or leaf in order to depoſit its eggs, raiſes a little tumor or bliſter, which by degrees fills with a red pulp, impregnated with the numerous progeny of that animalcule *. Hence, when the berry is dried, there

* Mr. Derham, ſpeaking of the nidification of inſects, admires the wonderful art or faculty which ſome of thoſe ſmall animals have, of making the vegetation and growth of trees and plants the very means of building their little cells or neſts, ſuch as are the galls and balls found on the leaves and branches of divers vegetables, as the oak, the willow, the briar, and ſome others. This (he adds) is ſo far out of the reach of any mortal underſtanding or power, that if we conſider the matter, we muſt needs perceive manifeſt deſign, and the concurrence of ſome great and wiſe Being, that hath from the beginning provided for the good of the animal.—The manner of the production of galls on oaks, and other vegetables, is well deſcribed by Malpighi, in an expreſs Treatiſe on that ſubject, and his obſervations are confirmed by Mr. Derham. They are occaſioned (according to theſe ingenious naturaliſts) by a certain fly, which makes a puncture to the very heart of the tender gem or bud, and there depoſits an egg or more, injecting at the ſame time a ſort of venomous liquor, by which the regular vegetation is obſtructed, and the ſap that was to nouriſh the young branch is diverted into the teguments of the bud, which by this means grow large, and form a covering for the incloſed inſect, as they were before for the tender branch and its appendage. The maggot thus impriſoned is at length tranſformed into a fly, which pierces through the incloſure, and expatiates at full liberty in the open air.—In the ſame manner are the little excreſcences pro-

there comes out of it a prodigious number of little flies, so minute, that they are scarce discernible, insomuch that the whole inward substance seems converted into these insects; to prevent which, the kermes is usually steeped in vinegar. — The berries are of a vinous smell, and of a rough bitter taste, which indicates their corroborating quality, and their fitness to correct the acescent humours. In a word, they are cardiac, deficcative, astringent, fortify the stomach, and prevent abortion. They yield abundance of volatile salt, which M. Marsigli thinks would have a better effect in medicine, if taken in a liquid, than when inclosed in conserves and confections, which hinder its action.—Thus much for the vegetables of Spain; let us now briefly consider its animals.

ANIMALS.

UNDER this article we have very little remarkable in Spain and Portugal, though few countries exceed them for plenty and variety of fowl both wild and tame, and their mountains and forests abound with deer, hares, rabbets, wild boars, and other game. The buffalo, or wild bull, is also found in some mountainous

duced on the leaves of nettles, ground-ivy, and other plants; the parent-insect, with its stiff feraceous tail, piercing the rib of the leaf, and laying its egg in the very pith or heart of it, together with some proper juice to pervert the regular vegetation: and from these balls or tumours issues a beautiful fly, when arrived to a state of maturity. — The Aleppo galls, used in dying, making ink, &c. though hard as shells, are no other than the cases of insects bred in them after the manner above described, and which gnaw their way out through the little holes observable in the galls. Of these insects see an account in Phil. Trans. No 245.

parts

parts of Spain, which is a beaſt reſembling an ox, but longer and bigger, having large thick horns, ſhort black hair, and a ſmall head *. — The Spaniſh ſheep, particularly thoſe about Segovia, are famous all over Europe for the fineneſs of their wool; and their horſes have been always noted for their ſwiftneſs and beauty. But however excellent their horſes may be, they have been long accuſtomed to breed great numbers of mules †, which, though not ſo ſwift, are much larger and ſtronger, and are generally uſed not only to ride on, but to carry burdens; and even their coaches are uſually drawn by theſe animals. They ſeem indeed to be much more fitted by nature for travelling over the craggy and mountainous parts of the country, being ſo ſure-footed, that they ſeldom make a falſe ſtep, let the road be ever ſo rough and difficult; and it is ſurprizing to ſee with what eaſe and ſteadineſs they will carry their riders, or very heavy burdens, even on the edge of the moſt dangerous precipice.

THE Cantharides, or Spaniſh Flies, as they are called (though the name of Beetles would be more proper) are a kind of poiſonous inſects, formed of little worms hatched on wheat, the

* The buffalo is very common in the Levant, particularly about Smyrna and Conſtantinople, and is frequently tamed and wrought as we do oxen. What we call Buff-leather, ſtrictly ſpeaking, is made of the ſkin of this creature: though the ſkins of elks, oxen, and ſuch like animals, when prepared in the ſame manner as that of the buffalo, are likewiſe denominated Buff, and uſed for the ſame purpoſes.

† Moſt people know, that the mule is a mongrel kind of quadrupede, uſually generated between an aſs and a mare, ſometimes alſo between a horſe and a ſhe-aſs; and as mules are a ſort of monſters, they do not propagate their ſpecies, though Ariſtotle, Varro, Columella, and other ancient writers, make mention of ſome that were prolific.

leaves of the poplar, &c. They are killed by expoſing them over boiling vinegar, after which they are dried, and will keep good a year or two, but not longer. They are all of a golden hue, but the beſt are thoſe which appear with different colours, having yellow lines running acroſs their wings; and are to be choſen freſh, dry, and whole. They are extremely hot and corroſive, and are remarkable for affecting the bladder and urinary paſſages with inflammation, exceſſive pain, and ſtrangury, even when externally applied. We have inſtances of their internal application, with good ſucceſs, in dropſical and other caſes; but their principal uſe is as a veſicatory, to raiſe bliſters on the ſkin, and by that means turn off and diſcharge ſome flux of ill humours.

ANTIQUITIES.

AS the Romans were a long time maſters of Spain, the remains of their ancient ſtructures are to be ſeen in ſeveral parts of the kingdom. There is a magnificent bridge over the Tagus, at Alcantara, which was built in the reign of the emperor Trajan. It conſiſts of no more than ſix arches, though it is upwards of ſix hundred feet in length; its height is ſaid to be two hundred feet above the water.

IN the road from Tarragona to Barcelona, is the tomb of the Scipios, which is a baſe of an obeliſk, or pyramid, anciently erected to their memory, with a figure on each ſide in the Roman habit; theſe are by ſome thought to be deſigned for the two Scipios, but others ſuppoſe them to repreſent Weeping Slaves. At a ſmall diſtance is a noble triumphal arch, erected by the family

family of the Licinii, adorned with fluted Corinthian columns, and a pediment with Dentiles, like the Ionic order.

At Merida, amongſt other remains of antiquity, there is yet ſtanding great part of a triumphal arch, now called by the inhabitants Arco de St. Jago. And at Tarragona we ſtill diſcern the ruins of ſome ancient Roman ſtructures, particularly of an amphitheatre, which has furniſhed materials for the building a neighbouring church. In a word, there are ſeveral other marks of its former grandeur to be met with in and about the city; but perhaps it is owing to the devaſtations of the Moors, that we do not find ſo many monuments of antiquity in Spain as might naturally be expected. — Leaving this ſubject therefore, we proceed to give ſome account of its more modern

BUILDINGS.

Amongst the cathedral churches of Spain, that of Toledo ſeems to claim the firſt notice, being one of the nobleſt and richeſt in the univerſe. It is all built of curious white ſtone, is 384 feet in length, 190 in breadth, and 107 in height. Its lofty roof is ſupported by eighty-eight ſtately columns, which divide it into three ſpacious iſles, whereof the middlemoſt is extremely grand and majeſtic. Eight large and beautiful gates of braſs, with magnificent porticos, lead into this noble fabric, which has a very high tower, from whence there is an extenſive proſpect over the neighbouring country. The choir of the high-altar is adorned with the fineſt carved work and gilding that can poſſibly be imagined, and incloſed with coſtly iron gates

fixed on bases of jasper. On each side of the altar is a brass pulpit, supported by pillars of the same metal. The choir of the canons is inclosed in the same manner, and enriched with the most curious carvings in wood and jasper. Both these choirs are adorned on the outside with fine statues in niches, and other ornamental imagery, representing several pieces of scripture-history. — As to the chapels in this cathedral, of which there are a great number, it is impossible to describe their beauty and riches, or the fine monuments of the kings, archbishops, and other illustrious persons whose remains are there deposited. The principal of these chapels, called the Sagrario, wherein the treasure of the church is kept, is all lined with jasper from the pavement to the roof; and the altar, which stands in a large niche, is encompassed with a ballustrade of silver. The image of the Virgin, as big as the life, is also of silver; and round the altar hang a great many lamps of the same metal. Forty or fifty large closets are contrived in the wall, which are filled with a prodigious quantity of gold and silver vessels, and other utensils, such as basons, chalices, crosses, crosiers, mitres, &c. The tabernacle, under which the host is carried in procession on particular festivals, is all of silver gilt, and of most exquisite workmanship. It may be taken into seven thousand pieces, and is so heavy, that it requires thirty men to carry it. Within this there is a vessel of pure gold, some of the first that was brought from America, which contains the consecrated bread. Here is also a figure of the Virgin sitting upon a rock formed of precious stones, amongst which is a diamond as big as a pigeon's egg. In short, it would require a volume to give a particular description of this

cathedral

cathedral and all the curiosities of its treasury; and therefore, from what has been already said, we leave the reader to judge of what we have not room to mention.

THE cathedral of Compostella, dedicated to St. Jago, or St. James the apostle, whom the Spaniards affirm to be buried in that city, is a strong and magnificent fabric, having a very lofty cupola adorned with four stately towers. The tabernacle or repository over the altar is perhaps the finest in the world, being supported by six angels mounted on as many columns; and the effigy of the great apostle is held up by four kings of Spain. The whole is of silver gilt, of the most curious workmanship, and enriched with all proper ornaments. Here are six large silver candlesticks, five feet high, presented by Philip the Third; and about thirty silver lamps are kept continually burning in this church, besides forty or fifty wax tapers round the altar. — As vast numbers of pilgrims resort hither out of devotion, there is a noble hospital built near the cathedral for the reception of the poor and sick, where they are treated with great care and humanity.

SOME are of opinion, that the cathedral of Seville, in which there is a mixture of the Gothic and Moorish taste, has something in it that looks majestic beyond any other in the kingdom. It is certainly a very stately edifice, being 407 feet in length, 270 in breadth, and 128 in height; and its roof is supported by two double rows of beautiful columns. The tower of this church is three hundred and fifty feet high, all built of brick, with large windows to give light to the stair-case, the ascent of which is so easy, that one may ride up it on horseback, or even in a chaise.

It is terminated by a cupola, on the top of which is the figure of a woman in brafs, that turns to point out the wind like a weather-cock. The inſide of the church is adorned with ſtatues, paintings, monuments, and other decorations, which it would be endleſs to deſcribe; and therefore we ſhall only mention the magnificent tabernacle on the high altar, which is of maſſy ſilver, weighing above ſix hundred pounds, the very workmanſhip whereof is ſaid to have coſt forty thouſand ducats.

THE cathedral of Leon is deſervedly admired for the beauty and regularity of its architecture, and the elegance and variety of its ornaments, in which reſpect it is reckoned the fineſt in Spain. This appears from the Spaniſh proverb relating to the three cathedrals before mentioned, and this of Leon, which runs thus: "Seville for grandeur, Toledo for riches, Compoſtella for "ſtrength, and Leon for curious workmanſhip." It is likewiſe remarkable for the monuments of an emperor, thirty-ſeven kings, and other illuſtrious perſonages there interred.

BUT of all the cathedrals in Spain, the moſt magnificent is that of Cordoua, which is ſtill called the Mezquita, having been originally a moſque, built in the eighth century, by the famous mooriſh king Abderhaman, and may be juſtly ranked among the wonders of the world. It is 600 feet in length, and 250 in breadth; and the roof, which is ſurprizingly bold and lofty, and richly gilt, is ſupported by 365 columns of fine marble. It has twenty-four gates adorned with ſculpture; and ſome of its chapels, of which there are upwards of three hundred, are particularly beautiful, being embelliſhed with gilding, paintings, and other ornaments.

To

The Escurial being the Palace of the Kings of Spain. B. Cole Sculp.

To the ſacred ſtructures already mentioned, let us add one more of the ſame kind, viz. the cathedral of St. Vincent in Liſbon, which is a vaſt Gothic edifice, heavy and clumſy indeed, but being ſeated on a hill, it makes a noble appearance at a proper diſtance, when grouped with the reſt of the public buildings. What it wants, however, in elegance and beauty without, is made up by the richneſs of its ornaments within, ſuch as ſtatues, paintings, and utenſils of gold and ſilver of exquiſite workmanſhip, enriched with precious ſtones of immenſe value.

WE now come to take a view of ſome of the royal palaces, and firſt of the Eſcurial *, ſo called from a little village of that name, in the neighbourhood of which it ſtands, about two and twenty miles from Madrid. This palace, (including the monaſtery, church, college, library, and other buildings) is not only the moſt magnificent in Spain, but perhaps in Europe, and is reckoned by the Spaniards the eighth wonder of the world. The whole pile of building is a vaſt ſquare, about three thouſand feet in compaſs, all of fine grey ſtone dug out of a neighbouring mountain, and ſo well poliſhed, that it looks like marble. The windows of the four fronts, including thoſe in the pavilions at each corner, amount to upwards of eleven hundred; but thoſe within are computed at as many thouſands. The principal front faces the weſt, having three noble gates, eſpecially that in the

* This palace was built by Philip II. of Spain, in memory of a victory his forces obtained over the French near St. Quintin in Picardy, in the year 1557, on St. Laurence's day; to the honour of which ſaint the king had made a vow to erect this ſtately edifice, in caſe his troops overcame the enemy.

middle, which leads to the church, a large and beautiful ſtructure, built in imitation of St. Peter's at Rome. It is 364 feet long, 230 broad, and of a proportionable height. The roof, which is finely gilt and painted, is ſupported by columns of the Doric order, dividing it into ſix ſtately iſles, with forty-eight chapels and altars, beſides the grand one at the eaſt end, which is magnificent beyond deſcription. The tabernacle of the great altar is of porphyry, wrought with the point of a diamond; it is made in the form of a cupola, ſupported by eighteen columns of agate, and adorned with gold and precious ſtones. The altar itſelf is of fine black marble, and behind it the wall is lined with a ſquare piece of porphyry, wherein one may ſee the inſide of the church as plain as in a looking-glaſs. It is aſtoniſhing to behold the ſacriſty or veſtry, filled with the veſtments, chalices, and other coſtly veſſels and utenſils belonging to the church. Here are a great number of ſtatues of ſaints, &c. of excellent workmanſhip, and ſeveral of the ſmaller ſort are of gold and ſilver. The paintings, which are reckoned above ſixteen hundred, are many of them large, and done by the moſt eminent maſters. Underneath the grand chapel is a large and beautiful mauſoleum or burying-place for the royal family, which is called the Pantheon, being a rotunda, built after the manner of that temple at Rome. The deſcent to it conſiſts of more than fifty marble ſteps, and the gate that opens into it is braſs gilt, and of very curious workmanſhip. The dome is lined with jaſper intermixed with little plates of braſs, and the pavement is likewiſe compoſed of ſquares of jaſper and marble, forming a ſtar in the middle. Facing the entrance is a kind of chapel or oratory, adorned in the moſt

ſumptuous

ſumptuous manner imaginable, particularly with a crucifix enriched with diamonds and other precious ſtones. In the middle of this noble vault we ſee a large brazen candleſtick, ſupported by figures of angels, and the four Evangeliſts of the ſame metal; and in twenty-ſix niches, which are embelliſhed with the richeſt ornaments, are placed as many urns or ſepulchres of black marble, twelve or thirteen whereof are already filled with the deceaſed kings and queens of Spain, and the reſt wait to receive the remains of ſucceeding monarchs. — As to the royal apartments, (or what we may properly call the Palace) a particular deſcription of them would carry us too far; and therefore we ſhall only obſerve, that they are large, ſtately, furniſhed in the moſt magnificent manner, and adorned with every thing that is rich and beautiful. Throughout the whole we ſee a variety of marble, jaſper, and other curious ſtones, carved by the beſt maſters, and in the grandeſt taſte; and all the halls, galleries, ſtair-caſes, &c. are filled with excellent paintings; to ſay nothing of the fine hangings, plate, and other coſtly furniture. —— The monaſtery (in which there are two hundred religious monks of the order of St. Jerom) conſiſts of five courts or ſquares, one larger than the reſt, each of them adorned with a marble fountain. The grand cloiſter, which is two hundred and ten feet ſquare, is paved with black and white marble, as are likewiſe the walks of the garden within it; and at the bottom of it is a beautiful chapel in form of a dome, open on all ſides, and ſupported by marble columns. The refectory, or hall where the religious take their meals, is very long, and adorned with fine paintings, amongſt which there is one repreſenting

Charles V. and Philip II. carried to heaven by angels. There are several infirmaries for the sick belonging to this monastery, two grand apartments to entertain strangers, nine kitchens, above forty rooms under ground for offices of divers kinds, and eleven vast cisterns, that will hold two hundred tons of water.—The college, where a number of young students are maintained at the king's expence, is a very handsome building; and the library is in all respects answerable to the rest of this noble and surprizing edifice. It contains a fine collection of books in all languages and faculties, both printed and manuscript, disposed in a very elegant manner, the stands or shelves being neatly carved, and made of the choicest sorts of wood in Spain or the Indies. The floor is beautifully paved with marble, and the cieling is adorned with admirable paintings representing the liberal arts and sciences. The books, which are about 100,000, are placed in five galleries one above another, all finely painted by Titian and other celebrated masters.—But it is time to conclude, for to describe every particular in the Escurial as it deserves, would fill a volume *, and we have already exceeded our narrow limits.

* The description of the Escurial by F. Francisco de los Santos actually makes a large folio; and to give the reader some idea of the surprizing grandeur of this palace, it is worth observing, that, according to that author's computation, it would take up more than four days to go through all its rooms and apartments, the length of the way being reckoned thirty three Spanish leagues, which is above a hundred and twenty English miles. We may judge farther of this by what Alvarez de Colmenar tells us in his Delices de l'Espagne, viz. that there are fourteen thousand doors belonging to this palace, and eleven thousand windows.

THE

THE palace of Aranjuez, about thirty miles ſouth of Madrid, though much inferior to the Eſcurial in bigneſs and elegancy of ſtructure, yet far exceeds it for delightful gardens and water-works, which are here in the higheſt perfection. It is ſituated in an iſland formed by the conflux of the Tagus and the Xarama, and a large canal cut from one river to another. A handſome terrace runs round the gardens, which are ſo well ſupplied with water from the Tagus, that they are never ſcorched with the ſun's heat, but kept in a conſtant bloom and beautiful verdure. In a word, the great number of fine fountains, grottos, caſcades, ſhady walks, ſummer-houſes, &c. render this palace the moſt charming of any in the kingdom, though the Eſcurial is moſt frequented by the royal family.

HIS Catholic majeſty's palace at Madrid is a ſpacious and magnificent edifice, conſiſting of ſeveral courts, with piazzas round them, and a great many gilt balconies, which make a pretty appearance. The royal apartments are very richly furniſhed, and adorned with fine tapeſtries, paintings, buſts, ſtatues, &c. too many to be deſcribed or enumerated. — Juſt without the town, upon the declivity of a hill, the king has another ſtately and pleaſant palace, called El Buen Retiro, or, The good Retreat, it being his uſual retirement in the heat of ſummer, or when wearied with the hurry of the court and city. It conſiſts of a ſpacious ſquare, flanked with pavilions at each corner, having a parterre and a beautiful fountain in the middle of it. The aparments are large and magnificent, furniſhed in the moſt elegant and coſtly manner, and embelliſhed with exquiſite paintings and other ornaments. As for the park and gardens, they are a perfect paradiſe, having

having fine ſhady walks, canals, grottos, fountains, ſtatues, and all the pleaſing variety that art and nature can produce, to form a delightful retirement.

THOUGH we have dwelt ſo long upon this ſubject, we muſt not leave it without taking ſome notice of an ancient caſtle or palace at Granada, built by the Mooriſh kings, which is ſtill kept in good repair, and juſtly eſteemed a wonder for its largeneſs and magnificence. In the way to it we paſs by a palace of a more modern date, built by ſome of the kings of Spain, but never quite finiſhed, and now neglected and running to decay. The Mooriſh palace appears like a citadel, being ſurrounded with a ſtrong wall, fortified with towers and baſtions, and is large enough to receive a garriſon of forty thouſand men. We firſt enter into a grand court paved with marble, which has a fountain at each corner, and a fine canal of ſpring water in the middle of it, from whence it is conveyed by pipes into the halls and chambers of the palace. The whole building is of free-ſtone, but the inſide of the walls are lined with marble, jaſper, and porphyry; the cielings of the rooms are many of them gilt, and throughout the palace we meet with hieroglyphical figures and inſcriptions. But the moſt beautiful part of this royal edifice is a ſpacious ſquare called El Quadro de los Leones, which has a fine ſtone gallery running round it, ſupported by a hundred and ſeventeen columns of white marble. In the middle of the ſquare is a noble fountain, where a large marble baſon is ſupported by twelve figures of lions, which throw water out of their mouths inceſſantly. The park and gardens, which lie on the declivity of the hill on which this palace is ſituated, are very delightful; and the whole

ſtructure

ſtructure is a ſufficient monument of the grandeur of the Mooriſh princes.

THE late royal palace at Liſbon deſerves to be mentioned among the reſt, not only as a beautiful and ſtately fabric, but on account of its pleaſant ſituation, having a charming proſpect over the river Tagus*, where it is ſo deep, that the largeſt ſhips can anchor before the windows of the palace. The apartments were well diſpoſed, very richly furniſhed, and adorned with fine tapeſtry, paintings, and other decorations. In it were two galleries about a hundred paces in length, in the firſt and ſecond ſtories, with balconies in the windows. In the third ſtory was the royal library, which contained a great number of valuable books in preſſes. Within the palace were alſo ſeveral large rooms, where the Cortes, or States, the Council of war, and the Courts of Juſtice aſſemble. The king's chapel was an elegant building, richly adorned, and ſhining with gold and azure, the very ſilver alone being valued at near a million ſterling. Adjoining to the palace was a ſquare court ſurrounded with a piazza, where the merchants meet, and expoſe their goods to ſale.

THIS palace was ſtanding, and appeared with the utmoſt ſplendor, when it was ſuddenly deſtroyed by that dreadful earthquake, which happened on the firſt of November 1755. This circumſtance will render it neceſſary to give ſome ac-

* This river has been long famous for its golden ſands, or ſmall particles of gold mixed amongſt them, as we learn from Ovid, Mela, Pliny, and other ancient writers; and it is ſaid the kings of Portugal have a ſcepter made of that gold, than which no purer is to be found in the world.

count

count of that terrible calamity, which we ſhall do from the obſervations of the reverend Mr. Clark, who was at Liſbon ſo lately as the latter end of the year 1761. "We paſſed, ſays he, "through ſome ſtreets, near a mile in length, "where the houſes were all fallen on each ſide, "and lay in that undiſtinguiſhed heap of ruin, "into which they ſunk at the firſt convulſive "ſhocks. Not that the reader is to imagine, "that the greateſt part of that fine city fell on "that fatal morning; ſo far from it, that, I be-"lieve, not above one-fourth part of it was de-"ſtroyed: for it prevailed more in one particular "quarter than the reſt; and there the deſolation "was almoſt univerſal, for there was ſcarce an "houſe or building that was not thrown down. "In the other parts of the city, ſome ſingle, ill-"conditioned, ruinous buildings fell, but the reſt "ſtood. And there is ſcarce a ſtreet but you will "ſee ſhores, and props fixed to the buildings on "each ſide, to prevent their falling even now; "they having ſuffered ſo much from the ſhocks "they had received. Conſidering how much time "has elapſed ſince the earthquake, little has "been rebuilt in proportion. — They have built "a cuſtom-houſe, an arſenal, a theatre, and "ſome few other buildings. All agree, that the "fire occaſioned infinitely more havock than the "earthquake. Thouſands of the inhabitants, "unhappily, in the firſt confuſion of their fear, "taking the ill-judged ſtep of thronging into "the churches; the doors of which being ſome-"times ſhut by the violence of the crowd, and "ſometimes locked by miſtake, when the fire "ſeized the roofs of thoſe buildings, theſe un-"happy ſufferers were moſt of them deſtroyed; "ſome by ſheets of lead, that poured like a

molten

" molten deluge upon their heads ; others mashed " by the fall of the roofs, and the rest burnt alive. " One's imagination can scarce form a scene of " confusion, horror, and death, more dreadful " than this. After the shocks were over, the fire " continued burning for many weeks ; and it is " thought was one principal cause of their escape- " ing the plague, as the putrefaction of the bo- " dies was by that means much less.

" THE calculation of the number that perish- " ed, as they kept no registers, must be in a great " measure conjectural, but that thousands and " ten thousands were destroyed, there is no " doubt The morning on which it happened " was most remarkably serene and pleasant, par- " ticularly about ten o'clock, and in one quarter " more, all was involved in this dreadful scene " of terror and destruction. As this event pro- " duced many changes, those among the com- " mercial parts of the city were not the least re- " markable. One, who yesterday was at the eve " of bankruptcy, found himself to-day with his " books cleared ; and hundreds, who lived in " ease and affluence, as soon as they had re- " covered from their first pannic and dismay, saw " want and poverty stare them in the face."

THE most magnificent palace of the king of Portugal is situated at Mafra, in a sandy and barren spot, in pursuance of a vow made by king John V. to found a convent for the poorest friary in the kingdom. Upon enquiry, the meanest convent appeared to be at Mafra, where twelve Franciscans lived together in a hut. In order to accomplish this vow, the king procured from Rome the draught of a building, that was greatly to exceed the Escurial in Spain, already described, and this he erected. In the centre

stands

ſtands a temple built entirely of marble; and behind the choir, is a houſe endowed with a large revenue for two hundred capuchins, who officiate in this magnificent church as chaplains. To the right of this building is a ſuperb and ſpacious palace for the king, the royal family, and the chief officers of the court. On the left is another palace equal in grandeur to the former, for the patriarch and twenty-four canons, who have the privilege of wearing mitres. Twelve thouſand people were employed in raiſing theſe ſtructures, which are ſaid to have coſt three-fourths of the royal treaſure, and of the gold brought by the Brazil fleets. At the diſtance of a mile from the church ſtands an elegant houſe encompaſſed by a ſmall wood, which, in this ſandy waſte, has a fine effect. The palace at Mafra being ſeated near the ſea, ſerves for a land-mark.

THE king of Portugal has likewiſe a large and beautiful palace at Villa Vitioſa, where, ſince the deſtruction of that at Liſbon, he generally reſides. This palace has a park three leagues in circumference.

WE ſhall now take notice of ſome remarkable buildings of a different kind in Spain. In the city of Madrid is a grand ſquare, called the Plaça Mayor, four hundred and thirty-ſix feet long, encompaſſed with noble piazzas, in the front of 136 ſtately houſes, built with the utmoſt uniformity, continued rows of balconies joining one to another; and no houſe being permitted to vary in the leaſt from the general form of the building, either in the windows, balconies, or other ornaments. In this ſquare are celebrated the bull-baitings, which we ſhall hereafter deſcribe, and the other public ſhews of Madrid, it being

being so spacious as to contain, with great ease, 50,000 spectators.

At Valladolid is likewise a great square, with a piazza, the exact model of that at Madrid, consisting of 500 arches, and 300 windows, all in full view, with 330 stately gates leading into those buildings.

We shall conclude this article with taking notice of some of the most remarkable aqueducts and bridges in Spain. One of the most extraordinary structures of the former kind is the Segovian aqueduct, which extends to a small river called Rio Frio, that rises in the skirts of a pass in the mountains, and takes from it as much water as would fill a duct capable of containing a human body. It is received into an arch of stone, at the distance of 500 paces from the city of Segovia, and from thence begins to run in the channel of the aqueduct, which does not require more elevation than 17 feet. By little and little the height increases as it comes to deeper ground, but without requiring more than one range of arches, till the water has passed over 65, where the arch is of the height of 39 feet, close to a Franciscan convent. There beginning to wind from east to west, they require two ranges of arches, one arch being put upon the other. In the part, where the valley is the lowest, the aqueduct is 102 feet high; the channel enters by the battlements of the walls, with an extreme elevation from the ground to the top of the arch, and the aqueduct extends through the middle of the city, from east to west, with an arched duct so large, that a man may walk in it; and from thence dividing, it extends to the public fountains, and the cisterns of convents and private houses. This structure consists of 161 arches

of

of hewn ſtone, which is a kind of blueiſh granite. It was doubtleſs built by the ancient Romans, and ſome attribute it to the emperor Trajan. In two niches on the higheſt part, were formerly ſtatues of Hercules, which are now changed for thoſe of our lady of St. Sabaſtian.

THERE is a bridge over the Guadiana at Badajoz, which is a ſtately fabric of ſtone, conſiſting of thirty arches, and above five hundred yards in length.—At Saragoſſa there are two noble bridges over the Ebro, the one of ſtone, the other of wood, which latter is reckoned the fineſt of the kind in Europe.—Nor muſt we forget the magnificent bridge over the Manzanarez at Madrid, built by Philip the Second, which is very long and lofty *.—To theſe we may add the fine bridge over the Mondego at Coimbra in Portugal, conſiſting of a double range of arches one above another, forming a covered way, through which people paſs, without being expoſed to the weather. And many more might be mentioned, but the detail would be dry and tedious.

Of the SPANIARDS *and* PORTUGUESE.

THE Spaniards have been always remarkable for their grave and ſolemn behaviour, but they begin to leave off their ancient faſhions, and at court copy in their dreſs the French. Hence they do not always appear abroad in a

* As the Manzanarez is a ſmall river, and almoſt dry in ſummer, it gave occaſion to a pleaſant ſaying of a certain ambaſſador, who ſaw it at that ſeaſon, That they ſhould either buy water, or ſell the bridge.—However, the river does not always appear ſo deſpicable, being ſometimes very much ſwelled by rains or melted ſnows falling from the mountains.

ſhort

ſhort cloak and coat, with a long ſword, curled whiſkers, and a pair of ſpectacles on their noſe. With reſpect to their morals, they are remarkable both for their frugality and their love of pomp, their abhorrence of drunkenneſs, their fidelity, valour and intrepidity. The baron de Monteſquieu, in his Spirit of Laws, obſerves, that they have been in all ages famous for their honeſty and fidelity, that they have frequently ſuffered death rather than reveal a ſecret, and that all the nations who trade to Cadiz, readily truſt their fortunes to the Spaniards, and have never yet repented of their having repoſed too much confidence in their integrity; and this our merchants who trade thither have always experienced. On the other hand, they are too much given to women, and their jealouſy, where either a wife, daughter, ſiſter, or even miſtreſs is concerned, ſeldom fails to end in bloodſhed; for they think no means too cruel, baſe, or unjuſt, either to gratify their revenge, or wipe off any ſtain caſt upon their honour. Pride of birth is no where carried to a greater height; and the inſinuation that a man is deſcended from the Moors, is ſufficient to make him vindicate the purity of his blood, by ſtabbing the ſlanderer, or cauſing him to be privately aſſaſſinated. Yet the ſame warmth of temper, which excites them to revenge, renders them open to friendſhip, and ready to exert themſelves in the generous and friendly offices of humanity. In ſhort, they have a mixture of the moſt amiable virtues, and the moſt ſhocking vices; and while they affect a haughty air to thoſe with whom they are unacquainted, no people upon earth are more courteous to thoſe with whom they are intimate. They hate the French, not only on account of their being

too

too much careſſed at court, but from their being ſhocked and diſguſted at their ſprightlineſs and levity, ſo oppoſite to their own natural gravity, while they are, in general, fond of the Engliſh, and the common people frequently cry, Let us have a peace with England, and a war with all the world beſides.

THE women are generally very lean, and have black eyes, flat boſoms, and ſmall feet, and tho' the men ſit on chairs, the ladies ſit croſs-legged on velvet cuſhions, a cuſtom which they derived from the Moors. They are ſaid to be addicted to painting their faces, tho' in moſt places they are kept much at home by the jealouſy of their huſbands.

ONE of the greateſt inconveniencies a ſtranger finds in travelling through this country, is the wretched accommodations to be met with in the public roads. The reverend Mr. Clerk obſerves, that you muſt abſolutely carry your proviſions and bedding along with you; and even then, unleſs you can lie down in your cloaths, eat eggs, onions, and cheeſe; ſleep while your mules reſt, riſe the moment you are called, and ſet out early in the morning before the heat comes on, you will fare ill as a traveller. It is a good method, ſays he, to carry dry tongues with you, hard eggs, ſome portable ſoup, tea, ſugar, and ſpirituous liquors, not forgetting even pepper and ſalt; and whenever you meet with good bread, meat, fowls, and wine, always to buy them, whether you want them or not, becauſe you know not what to-morrow may produce. A knife, fork, and ſpoon, are abſolutely neceſſary, for you will find none; nor ſhould you omit a candleſtick, wax candles, and a pair of ſnuffers; but great care muſt be taken to carry as few books as poſſible, leſt

leſt they ſhould be ſeized by the Inquiſition, and neither tobacco nor rum, which are contraband goods, and may occaſion the detention, if not the ſeizure, of your baggage.

A taſte for gallantry and dancing prevails univerſally in Spain, and theſe are the two ruling paſſions of the country. The latter is their favourite entertainment, and their graveſt matrons never think themſelves excluded by age from this diverſion; hence it is not uncommon to ſee the grandmother, mother, and daughter all joining in the ſame dance.

THO' the men and women all wear the ſame dreſs in the ſtreet and at maſs, yet the ladies in their private viſits wear as great a variety of dreſs, and of a much richer ſort than thoſe in England. The Spaniards uſually breakfaſt and ſup in bed; their breakfaſt is generally chocolate, they ſeldom drinking tea. Their dinner is uſually a pochero, or beef, veal, mutton, pork, bacon and greens boiled together: but if it be a richer or more expenſive mixture of meats and delicacies, it is then termed an Olla Podrida, or what we term an Olio. They are fond of garlic, and have a proverb, that olives, ſallad, and radiſhes, are food for gentlemen.

THE number of ſervants, kept by the grandees and people of the firſt rank, is exceeding great, for ſome of them have 3 or 400 domeſtics, and the Engliſh ambaſſador, in compliance with the taſte of the country, keeps near a hundred. As their coaches are uſually drawn by four mules, they have two poſtilions, with generally four, and ſometimes ſix footmen behind the coach. In the hot weather they take out the ſides and backs of their coaches, for the ſake of the air. They ſeldom uſe a ſedan, and when they do, they have

have always two footmen who go on each ſide the hindmoſt chairman, in order to hold him up, in caſe he ſtumbles. There are alſo two on each ſide of the ſedan, and two who follow behind with lanthorns, tho' it be in the middle of the day.

THE moſt favourite diverſion of the Spaniards and Portugueſe being their Bull-feaſts, which are peculiar to thoſe nations, we ſhall give a particular deſcription of one of them exhibited in the Plaça Mayor on the 15th of July 1760. The ſquare was thronged with people, and all the balconies ornamented with different coloured ſilks, and the houſes crowded from the top to the bottom. A ſloping ſcaffold was alſo placed round for the common people, and raiſed about eight or nine feet from the ground.

THE cavaliers who were to fight the bulls, were four in number, and came in four coaches, of a ſingular make, with glaſſes at the ends, and quite open at the ſides, from whence they bowed to the people in the balconies, and were accompanied by their ſponſers, the dukes of Oſſuna, Banos, Arcos, and Medina Cœli. Before the royal family came, a company of halberdiers, followed by ſeven or eight of the king's coaches, preceding his coach of ſtate, which was extremely rich, the pannels being beautifully painted, and the whole adorned with gilding. This was followed by a coach with ſome of the great officers, and next came the king and queen in a magnificent coach painted blue, with the ornaments of ſolid ſilver, and a crown at the top: the trappings of the horſes were likewiſe adorned with ſilver and large white plumes. Then followed the coaches of the prince of Aſturias, the two Infantas, and Don Lewis, with their attendants.

THEIR

THEIR majesties sat opposite to the balcony of the English ambassador, in which was our author. This last was gilt, and had a canopy and curtains of scarlet and gold. On the right hand of the king's balcony, which was also magnificently adorned, were placed the rest of the royal family, and on the left the gentlemen of the bedchamber in a row, dressed in a uniform of blue and red, richly embroidered with gold. At length two companies of boys, in an uniform of red taffety jackets and caps, watered the square, and then came the six chief alguazils of the city, mounted on fine horses covered with rich trappings, and dressed in the old Spanish habit, black with slashed sleeves, great white flowing wigs, and their hats adorned with feathers of different colours, advanced towards the king's balcony, under which they were obliged to stay to receive his orders.

THE troops belonging to the cavaliers at length entered the square in four large companies, dressed in silk Moorish liveries, elegantly ornamented with lace and embroidery: these first bowed to the king's balcony, and then went in procession round the square. After them came the four cavaliers, or knights in the old Spanish dress, with plumes in their hats, mounted on fine horses, each holding in his hand a slender lance, and attended by two men on foot, dressed in light silk of the colour of his livery, with cloaks of the same: these never forsake his side, and are his principal defence. The cavaliers then dispose themselves for the encounter, the first placing himself opposite to the door of the place where the bulls are kept, and the other at some distance behind him.

AT a signal given by his majesty, the doors opened, and the bull appeared, to the sound of martial music, and the loud acclamations of the people, when seeing one of the attendants of the first cavalier spreading his cloak before him, he aimed directly at him; but the man easily avoided him, and gave his master an opporrtunity of breaking his spear in the bull's neck. In the same manner the bull was tempted to engage the other cavaliers, and always with the same success, till being wounded by each of their lances, he was encountered by the other men on foot, who after playing with him with incredible agility, as long as they thought proper, easily dispatched him by thrusting a sword either into his neck or side, which brings him to the ground, and then they strike a dagger or sword behind his horns into the spine, which is always immediate death. After this the bull is hurried off by mules finely adorned with rich trappings.

THE cavaliers being at length sufficiently tired with these exploits, the king gave them leave to retire, and bulls of a more furious nature were let out one at a time from another door, and were encountered by men on foot, who were so far from fearing their rage, that they strove to increase it by darting at them little barbed darts, ornamented with bunches of paper, some of which were filled with gunpowder, and no sooner stuck in the bull, than they went off like a serpent. They had also goat skins blown up with wind, and increased the fury of the bull by placing them before him, which made a very ridiculous part of the entertainment. Many of the bulls, however, would not attack them, and one of the most furious that did, shewed more fear than in encountering the most sturdy antagonist.

OUR

Our author's apprehenſions were at firſt principally excited for the men on foot, but the cavaliers were in much more danger, their horſes being too full of fire to be exactly governed, and were every moment in danger of being overthrown; indeed two beautiful horſes were gored, one of which was overthrown with his rider, who had the good fortune to eſcape unhurt. The courage of theſe horſes is ſo great, that they have been often known to advance towards the bull, when their bowels have been trailing on the ground.

This ſpectacle, our author adds, is one of the fineſt in the world, whether it be conſidered merely with reſpect to the ſplendor of the ſight, or as an exertion of the amazing agility and dexterity of the performers. The Spaniards are ſo devoted to it, that the very women would pawn their laſt rag to ſee it. Nothing can be imagined more crowded than the houſes even to the top of the ridges; and dearly do they pay for their pleaſure, by being pent together in the hotteſt ſun, and with the moſt ſuffocating heat that can be endured. This is certainly a remnant of Mooriſh, and, perhaps, Roman barbarity; but tho' it will not bear the ſpeculation of the cloſet, or the compaſſionate feelings of the tender heart, which muſt brand it with the name of cruelty; yet it muſt be confeſſed, that it has all the good effects of chivalry, and teaches to deſpiſe danger, and to afford a generous aſſiſtance to thoſe engaged with us in dangerous and difficult enterpriſes.

The bull feaſt in this magnificent ſquare, is never exhibited but upon ſome extraordinary occaſion, as the acceſſion or marriage of their kings; but there is a theatre without the walls, where there are bull feaſts every fortnight, which

are, by some people, greatly preferred to the others; for tho' there is little difference in the manner of engaging the bulls, yet they being more furious, this is attended with still greater danger.

THE same reverend divine, from whom we have borrowed the above description of the bull feast, gives us a very strange idea of the Spanish theatre, which he visited at the season for acting the Autos, or plays, in support of the Catholic Faith. The theatre made a good appearance with respect to its size and shape, but was somewhat dirty and ill-lighted; and what was even worse, had an equal mixture of day-light and candles. The prompter appeared with his head through a little trap-door, above the level of the stage, and read the play loud enough to be heard by the people in the boxes. The pit made a motly appearance, many standing in their night-caps and cloaks, while officers and soldiers were interspersed among the dirtiest mob. Indeed the side and front boxes were filled with persons well dressed, and that which answered to our two shilling gallery, was filled with women all in the same uniform, a dark petticoat, and a white woollen veil. The actors were indeed dressed even in richer cloaths than those worn in our theatres, and these they perpetually changed, in order to shew the expensive variety of their wardrobe. After several tedious and insipid scenes was an interlude of humour. One of the comedians addressed a lady who sung very agreeably, and offered her a purse of money: mean while a man brought in three barbers blocks, which he placed upon the stage, and first dressed in men's cloaths; but then undressing them, he clothed them in women's apparel. Soon after came in three men, who were resolved

resolved to tempt those three ladies, but they proved inflexibly coy, and their gallants in a little time discovered their mistake. At length, after some tiresome, uninteresting scenes, filled with fustian and bombast, an actor dressed in a long purple robe, in the character of Christ, preached to the four quarters of the world in their proper dresses; Europe and America heard him with joy, but Asia and Africa preserved their infidelity. The person who then represented the blessed Saviour, was soon after blindfolded, buffeted, spit upon, bound, scourged, crowned with thorns, and compelled to bear his cross; when kneeling down, he cried *Padre mi! Padre mi!* "Father! Father! why hast thou forsaken me!" After this, placing himself against the wall, with his hands extended, as if on the cross, he imitated the expiring agonies of our Saviour. At length, one of the actresses unbound him, took off his crown and purple robes; and he, putting on his wig and coat, joined the rest of the actors in a dance. Afterwards one of the actresses, in a long speech, explained the nature and design of the sacraments; and the play concluded with Christ appearing in a ship triumphant.

Our author soon after went to see a regular comedy, and had two other English gentlemen in the same box with him. They understood very little of the first act, in which appeared a king, a queen, and an enchantress, but the interlude, with which it was concluded was extremely low. The scene represented the inside of a Spanish inn during the night: three feather-beds, and as many blankets, were brought upon the stage: the queen and her maids of honour, personating the mistress of the inn and her maids, immediately began to make the beds. Afterwards

six men came, in order to lie there; and one of them being a miser, had rolled his money in 20 or 30 pieces of paper. They undressed before the ladies, by pulling off six or seven pair of breeches, and as many coats and waistcoats, and got into bed, two and two: the jest now consisted in seeing them kick the cloaths off one another, and then fight, as the spectator is to suppose, in the dark. "The absurdity and ridiculousness of this scene, says our reverend author, made us laugh immoderately. The fight "of the feather-beds, the men kicking and sprawling, the peals of applause that echoed through the "house, were truly inconceivable; tho, I believe, "our neighbours in the next box, thought we laughed at the wit and humour of the author. It was "a scene that beggars all possible description, and "I defy any theatre in Europe, but that of Madrid, "to produce such another." When this interlude was finished, it was succeeded by some other scenes between the king, queen, enchantress, and the rest of the actors. Five or six of them drew their swords upon this powerful enchantress, who boldly parried them with her wand, and to their great amazement, retired unhurt into her cell. At other times, the enchantress killed with a look, and restored to life with a second. In short, after several ridiculous incidents, the enchantress becomes reformed, renounces the devil and all his works, and embraces the Catholic Faith. These dramatic pieces are indeed far from being the best of the kind.

THE Spaniards are not wanting in capacity for the sciences, yet little progress can be expected from them, while they are debarred the use of their natural talents; for the clergy not being very learned themselves, it is a point of

of policy in them to suppress all scientifical knowledge among the laity. Hence, tho' Spain has no less than twenty-two universities, and several academies, they are under such restrictions, that those who attend them, can never make any figure in literature; however, in history the Spaniards have many valuable writers, but it is dangerous to descend too near to the present time. In poetry they have many writers, besides the celebrated Lopes de Vega, who wrote an heroic poem, called The Conquest of Jerusalem, with several tragedies and comedies that have been justly admired; but those which are now most frequently acted are miserable performances, and, as the reader has seen, a mixture of religion and buffoonery. Indeed their songs have a pleasing air of simplicity, and in some of them are much sentiment as well as dignity: those upon love are extremely chaste, and some of them have a pleasing air of romance, while they are at the same time grave, majestic and pensive, like the people themselves. The most celebrated writers of humour in prose are Cervantes and Guevara. However, in physic and surgery, they are said to be at least two centuries behind the English; but where the people are firmly persuaded that saints, miracles, and charms can be procured to cure the most inveterate diseases, there must be little inclination to have recourse to art.

It is now time to give some account of the manners of the Portuguese, who are generally characterized as being cruel, treacherous, malicious, and revengeful, both to one another, and to strangers; crafty in their dealings, and the meaner sort addicted to thieving. In pride they exceed the Spaniards, for the grandees and their ladies stand upon the nicest punctilios with respect to

rank and titles; even the ladies are ſerved by their maids and ſlaves on the knee; and indeed women of quality will ſcarce be ſpoken to by mean people in any other poſture. De Farca, a Portugueſe writer, ſays of his countrymen, "The nobility think themſelves gods, and require a ſort of adoration; the gentry aſpire to "equal them, and the common people diſdain "to be thought inferior to either." However, in theſe general characters of whole nations, it would be the greateſt injuſtice to extend them to every individual; and thoſe who have been long acquainted with the Portugueſe, will give their teſtimony, that there are many noble exceptions to this general character.

THE Portugueſe ladies are ſmall of ſtature, with their complexions inclining to the olive. Their features are delicate, but their viſage thin. They have ſparkling eyes, and their hair is black and ſhining. They have a good ſhare of wit, and it is but doing them juſtice to ſay, that the greateſt part of them are generous, charitable, and modeſt. They wear hoops and ſeveral gowns one over another, of rich ſtuffs trimmed with gold and ſilver lace. Their ſhoes are of black Spaniſh leather, ſtrait as a glove; and when they go abroad, they have a kind of ſilk ſandals faſtened to rings that raiſe them half a foot from the ground, and make them walk very aukwardly. Their ſtays are high before, but ſcarce reach half way up their backs, and would expoſe the tawny complexion of their ſkins, if their ſhoulders were not covered with paint. Their hands and feet are ſmall and well-proportioned; and their wide ſleeves, with broad ruffles buttoned at the wriſts, make their hands appear leſs than they are. The people of quality wear very fine linen, and as this

this is ſcarce and dear, the meaner ſort have none; for rather than wear coarſe linen, they will go without. The ladies wear about their necks a broad laced tucker; and inſtead of a girdle, tye a ſtring of medals, or reliques, or perhaps the cord of ſome religious order, about their waiſt, the ends of which reach down to the ground. Acroſs the top of the ſtays, they have a kind of breaſt-plate of diamonds, from whence hangs either a chain of pearls, or ten or twelve little knots of diamonds. They have likewiſe bracelets, pendants, and rings in abundance, but no necklaces. In their hair they wear a variety of precious ſtones, ſometimes in the form of artificial butterflies, or other inſects, and ſometimes they adorn their hair with ribbons and feathers of various colours, but when they go abroad they throw a veil over all. The Portugueſe gentlemen generally wear black, and thoſe of the court frequently follow the French faſhion.

WITH reſpect to their houſes, the floors and cielings are formed of plain white plaiſter, that looks like poliſhed marble. Their furniture and apartments are changed according to the ſeaſon of the year; and upon the lower floor of their ſummer apartments, they uſually throw water every morning, which ſoon dries up, and leaves a refreſhing coolneſs. Upon theſe floors they ſpread fine mats, and cover the walls with them chair-high, and above are hung pictures and looking-glaſſes; but round the rooms of the ladies apartments are cuſhions of ſilk or velvet, which they ſit upon croſs-legged, like the Spaniſh ladies. Between the cuſhions are fine tables and cabinets; and at certain diſtances vaſes of ſilver, in which are orange or jeſſamine trees, and in the windows they have frames of ſtraw-work to keep out the

ſun. In the upper apartments the hangings, paintings, plate, looking-glaſſes, and cabinets, are extremely rich, and the floors frequently covered with Turkey carpets. In ſummer they have only very thin curtains, but in winter their beds and hangings are of velvet trimmed with gold or ſilver lace. Veſſels of copper, tin, or pewter, are ſaid to be never ſeen in the houſes of perſons of quality, where they only uſe ſilver, or earthen ware; and have many dozens of ſilver plates, and a great number of diſhes of the ſame metal. But amidſt all this wealth, the bad œconomy of the grandees reduces them to a neceſſitous condition, even while they are encompaſſed with this ſplendor: for they are above inſpecting the accounts of their ſtewards, and it is beneath them to endeavour to beat down the price of any thing they purchaſe, or even to take change of a ſhop-keeper out of a piece of gold. As a tradeſman frequently gives ſeven or eight years credit, he is obliged to ſet down double the price the goods might be bought for with ready money: the tradeſmen, however, ſeldom loſe their debts, for the Spaniſh and Portugueſe grandees have ſo much honour, that when preſſed for money by their tradeſmen, they readily aſſign a part of their rents for the payment.

THE houſes of the grandees are crowded with domeſtics; for ſome of them have 4 or 500 of both ſexes, the greateſt part of whom are merely for ſhew. Beſides theſe they have abundance of dwarfs, who are dreſſed as fine as poſſible; and have many Mooriſh ſlaves, theſe laſt being their beſt ſervants; for the others will ſometimes pride themſelves on having as good blood as their maſters. The very beggars rather demand than ſupplicate an alms, alledging their being old Chriſtians;

tians; and if you give them no money, they must be dismissed with a compliment. For being an old Christian, or, in other words, of an ancient Christian race, is both in Spain and Portugal esteemed the highest honour, and far superior to what is termed a New Christian, or a Half New Christian, by which last they mean those whose new converted ancestors have been married to old Christians.

THE food of the Portuguese is nearly the same with that of the Spaniards; the men mix water with their wine, and the women generally drink only water. It is customary with them, as well as with the Spaniards, to betake themselves to sleep about noon, on account of the heat, and to transact most of their business in the morning and evening, or even at night.

THEY travel here much in the same manner as in Spain, only the Portuguese have fewer coaches, and travel more by water than the Spaniards, the country lying along the sea coast, and being crossed by many great rivers that rise in Spain. The mule or the litter are generally used on a journey: Their horses, which are sprightly, and well-made, serve indeed for short visits, to prance at a procession, or before the windows of their mistresses; but the mules, for one of which fifty or sixty guineas is frequently given, are fittest to climb their mountains.

THE state of learning in Portugal, is at as low an ebb as possible. There are indeed universities at Coimbra and Evora: at Lisbon is a royal academy for the Portuguese history; at Santarene is an academy of history, antiquities, and languages; and at St. Thomas's is an academy of sciences on the same footing with that at Paris; but while bigotry continues here at its present

enormous height, it is impoſſible that ſcience ſhould ever flouriſh. An Italian capuchin in 1746, publiſhed a work in the Portugueſe tongue on the true method of ſtudy, in four volumes quarto, which he dedicated to his Portugueſe majeſty, and there aſſerts, that the ſchools of this country are places of retreat for thoſe errors which Newton and Des Cartes have driven out of the other parts of Europe; and he even obſerves, that thoſe great lights of the world, Galilæo, Des Cartes, Newton, and Gaſſendi, are conſidered in Portugal as atheiſts and heretics, not to be mentioned but with ſome marks of execration. Thus D'Oliveira, a Portugueſe author, ſays, in the preface to the firſt volume of his Memoirs, "In our country we live in ignorance "without knowing it; but on leaving Portugal, "our eyes ſeem ſuddenly to open, and we immediately ſee that ignorance in which we were "involved. Foreigners allow us underſtanding, "docility, morals, diſcernment, and a genius "for comprehending what is commendable and "good; but our conceit, our gravity, our confined manner of life, which deprive us of all "freedom of thought, expoſe us to juſt cenſures, "and give riſe to thoſe hateful opinions other "nations entertain of us."

THE Portugueſe not only neglect agriculture, to ſuch a degree, that half the country lies waſte, but all arts and manufactures, tho' the country has the fineſt materials, which they diſpoſe of unwrought to foreigners, and when worked up, purchaſe them again at a high price. They indeed make a little linen, a variety of ſtraw-work, and candy ſeveral kinds of fruit, particularly oranges. They have alſo ſome coarſe ſilk woolen manufactures, but theſe are trifling articles,

ticles, that support only a small part of the nation.

THEY, however, carry on a very extensive trade, but reap very little profit from it, they being obliged to vend, not only their own produce, but all the merchandise and riches brought from their settlements, in other parts of the globe, to the Europeans, and particularly the English and Dutch, in exchange for corn and manufactured goods of all kinds, with which they supply both Portugal and its possessions abroad. The chief commodities of the Portuguese are imported from their own colonies, and particularly from Brazil; these are tobacco, cacao-nuts, sugars, spices, drugs, ivory, ebony, Brazil-wood, hides, gold, diamonds, pearls, and other valuable gems.

THOUGH most of the Spanish wool is sent abroad unwrought, yet it must be acknowledged, that the woollen manufactory at Segovia is very considerable. At Toledo, Granada, and some other places, they weave taffeties, damasks, and velvets, but none of the best; though a vast number of hands are employed in the silk manufacture in several parts of the kingdom. The quantity of silk produced in Spain is almost incredible; for we are told, that in the neighbourhood of Murcia only, they have such plenty of mulberry-trees, and feed such numbers of silk-worms, as yield them annually 200,000 pound weight of that valuable commodity.

IN the province of Biscay they manufacture great quantities of iron, whole towns being filled with smiths, cutlers, and other mechanics, employed in various works of iron and steel, especially in making swords and fire-arms, for which they are particularly famous.—The city of Cordua in Andalusia is noted for a curious sort of leather,

leather, in great requeſt there as well as in other counties *.

IT is hardly to be conceived what vaſt quantities of wine and oil are made in Spain and Portugal, which (together with their raiſins, oranges, lemons, and other fruits) are chiefly taken off by England and Holland. The moſt noted Spaniſh wines are thoſe of Galicia, Alicant, Malaga, Barcelona, and Xeres de la Frontera, in which laſt city and its neighbourhood 'tis ſaid they make every year about 60,000 pipes of that generous wine from thence called Sherry. But the greateſt part of the wine conſumed in England is brought from Oporto in Portugal; and this indeed may be reckoned the beſt commodity of that kingdom, their oil and fruits, as well as their manufactures, being inferior to thoſe of Spain. Great quantities of ſalt are continually exported from Setubal or St. Ubes by the Dutch and other nations: and the ſalt mines of Catalonia yield a conſiderable revenue to the duke of Cardona, to whom they belong.

HOWEVER, notwithſtanding what has been ſaid, there is in Spain a want of many of the moſt neceſſary trades, and of the few they have, a great part is in the hands of the French, who are very numerous here; for many of the natives, beſides their averſion to work, diſdain to ſtoop to laborious employments, hence they are obliged

* The leather brought from this city we call Cordouan or Cordovan, which being formerly uſed for the upper-leathers of ſhoes, it is probable the term Cordwainers, by which our ſtatutes denominate Shoemakers, was thence derived; eſpecially as the French workmen, who prepare that ſort of leather, are ſtill called Cordouanniers.—But ſome derive the French Cordonnier (Shoemaker) and our Cordwainer from Corde, a rope, becauſe ſhoes were anciently made of cordage, as they ſtill are in ſome parts of Spain.

to part with the gold and silver they receive from America, to purchase every thing else that can contribute to convenience and splendor.

SPAIN is extremely well situated for trade and navigation: the Spaniards might therefore be their own carriers, but this advantage they neglect, and leave it to other maritime nations, who turn it to a very good account. The Spaniards indeed deny them all access to their American dominions, and are so jealous of having any others interfere with them in that trade, that no foreign ships must ever approach their coasts: yet even from the commerce carried on in their own ships, they receive small advantage, they being little more than factors for the French, English, Dutch, and Italians, who send their goods to America by them, and have the greatest share in their return of gold, silver, and other commodities. The trade to America was formerly carried on by the Flota and galleons. The Flota, or Plate-Fleet, consists of a certain number of ships, some belonging to the king, and others to the merchants. These used to set sail from Cadiz to Mexico about August, unlading at Vera Cruz, and returning to Spain in 18 or 19 months. The galleons were two men of war, called Capitana and Almiranta, which served as convoy to eight or twelve ships that put to sea every March or April. Their first port was Carthagena; from thence, by the way of the Havannah, they returned to Spain; but since the year 1737, the Flota and galleons have been discontinued, and the Spanish trade to America is carried on in register ships, which any of their merchants may send, after having obtained a permission from the council of the Indies. These sail from Cadiz directly to Lima, Buenos Ayres, Maracaibo, Honduras, Vera Cruz,

Cruz, and Campeachy. In 1728, an exclusive charter was granted to a company for trading to the Caraccas, a permission to the inhabitants of the Canary Islands only excepted, who were allowed to send thither annually one register ship, whose cargo was entirely to consist of the produce of those islands. In 1756, another company was erected for trading to Hispaniola and Porto Rica, and sending annually ten register ships to the bay of Honduras, and the ports of the province of Guatimala.

THE Portuguese ships seldom frequent the other countries of Europe or the Levant, their voyages chiefly extending to the coasts of Africa, particularly the gold coast, whence they carry negroes to Brazil, and also purchase some gold and ivory. They likewise trade to their East India colonies, of Goa, Diu, and Macao; but this trade, tho' once very important, is now greatly declined.

BRAZIL is however still a plentiful treasury to Portugal, and foreigners are entirely excluded from all commerce with that country. Yet the Portuguese carry on a considerable clandestine traffic with the Spaniards, which chiefly consists in the exchange of gold and silver. The fleet which annually sails to Brazil, goes and returns in seven or eight months, and when homeward bound is convoyed by some men of war which are sent to meet it. Their ships from Africa, or the East Indies, also return in company.

As the Portuguese, like the Spaniards, may be considered as the factors of Europe, their trade is far from being of the advantage to the country that it might be. Tho' they want manufactures, that are required both for their own consumption, and the supply of their colonies, yet the exportation of gold is prohibited by law, tho' with that alone

alone they can pay the balance due to other countries for those manufactures. They have even behaved with the greatest ingratitude to this nation. It was England, that with a generosity never paralleled, freely and unasked, sent them a supply of corn and money immediately after their suffering the late dreadful earthquake; and it was England that lately saved them from being conquered by the Spaniards, and being obliged to fix the seat of goverment in Brazil; yet our merchants at Lisbon are now greatly oppressed, and instead of that favour and indulgence they had the greatest reason to expect, the laws are wrested against them, and the greatest part of the commodities they want, are purchased of the French and Dutch, to the prejudice of the English, to whom they owe their existence as a nation.

We shall conclude this article with some observations on the want of people in Spain, and the poverty of the inhabitants; two circumstances which appear the more remarkable, as this country might be expected to be both populous and rich, since immense treasures have been poured into it from abroad, and the stream of wealth, it might naturally be expected would attract the people of all the countries that want this advantage.

The kingdom of Spain is said to contain about seven millions and a half of inhabitants, but it would support above twice that number, was it properly cultivated. It is even said, that in the time of the Goths and Moors, it contained between twenty and thirty millions of people. The usual reasons assigned for its now being so thinly inhabited, are, first, the expulsion of the Moors; for when Ferdinand the Pious took Seville from them, in the year 1248, the several districts of this

this kingdom contained 100,000 populous towns and villages; and when Ferdinand the Catholic reduced the kingdom of Granada, it consisted of 50 fortified towns, besides an infinite number of smaller places, the greatest part of which were afterwards demolished. When Spain was thinned of its inhabitants by the expulsion of the Moors, it was still farther depopulated by the vast numbers sent into their American dominions, which have been a constant drain that has carried off the most active and enterprizing part of the people. Other grand causes of the want of inhabitants is the decay of those arts and manufactures, which formerly flourished there, the heavy taxes of the people, and the number of the convents, by which it is said, that no less than 200,000 persons are constantly restrained from propagating their species.

THEIR poverty is no less remarkable, though, as it hath been already intimated, that the country is capable of supporting many millions more than its present inhabitants in the greatest plenty, and prodigious sums have been poured in from America. Savala computes, that from the year 1492, when America was discovered, to the year 1731, about six thousand millions of eight, in registered gold and silver, have been imported into Spain, exclusive of far greater sums unregistered, besides those received by foreign merchants from the Spanish dominions in America. It even appears that, one year with another, Spain receives from her American colonies above twenty-six millions of pezos, or pieces of eight: yet Ustariz computes, that all the coined and wrought gold and silver in Spain, including that belonging to churches and private persons, scarcely amounts to one hundred millions of piastres. An ingenious

ingenious author obſerves, that "Hitherto the "tide of wealth, which conſtantly flowed into "Spain, ran thro' that kingdom like a haſty tor- "rent, which, far from enriching the country, "hurried away with it all the wealth it found in "its paſſage. No country in Europe has receiv- "ed ſuch vaſt treaſures as Spain. In no country "in Europe is ſeen ſo little money: for, from the "time that the Indies fell into the hands of Spain, "the affairs of that monarchy have been con- "ſtantly going backward. In America, their ſet- "tlements were carried on conformably to that "genius, and to thoſe maxims which prevailed "in their government in Europe. No means of "retaining their conqueſts, but by extirpating "the people; no ſchemes for the advancement of "trade; no attempts at the reformation of abuſes, "which became venerable, in proportion to the "miſchiefs they had ſuffered by them; in govern- "ment, tyranny; in religion, bigotry; in trade, "monopoly.

"WHEN the Spaniards found, to their ambition, "which was boundleſs, that they had joined a "treaſure which was inexhauſtible, they ima- "gined there was nothing too vaſt for them to "compaſs. They embraced a thouſand projects "at once; many of them noble ones in theory; "but to be executed with different inſtruments "in different parts of the world; and all at a "vaſt expence of blood and treaſure. The wars, "which were the reſult of theſe ſchemes, and the "Indies, which were to ſupport them, were a "continual drain, which carried off their people, "and deſtroyed all induſtry in thoſe who remain- "ed. The treaſure which flowed in every year "from the new world, found them in debt to "every part of the old; for to the reſt of their revenues,

" revenues they had forgot to add that, which " is a great revenue itself, and the great support " of all the others, œconomy. On the contrary, " an ill order in their finances at home, and a " devouring usury abroad, swallowed up all their " treasure, whilst they multiplied the occasion " for it. With the best scheming heads in Eu- " rope, they were every where outrivalled; with " brave and well-disciplined troops, they were " almost always defeated; with the greatest trea- " sures, they were in want; and their armies " were ill provided, and ill paid. Their friends " exhausted them by trade; their enemies by " plunder. They saw new states arise out of the " fragments of their dominions; and new ma- " ritime powers start up from the wrecks of their " navy. In short, they provoked, troubled, and " enriched all Europe; and at last desisted through " mere want of strength. They were inactive, " but not quiet; and they were enervated as much " by their laziness, during this reserve, as " they had been weakened before by their ill- " judged activity. At present the politics of " Spain, with regard to America, seem to be to " preserve South America, and particularly the " navigation of the South-Seas as much as pos- " sible to themselves; to destroy effectually the " contraband trade, and to encourage the export " of their own manufactures."

END of VOL. I.

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